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### American-built Russian Steamers.

Two steamers of a partially warlike character have just been built in our country for a Russian company, and are designed for trading between the Amoor river in Russian Asia, China and California. One named the *Manjoor* was built at Boston; the other, named the *Japanese*, at New York. The latter is 1,400 tuns burden, the former 1,000 tuns. Their engines are strong, plain and compact, and designed for effective service, not show. They are both propellers, and have made their trial trips, running at the rate of from eight to ten knots an hour easily. Their model is good, and under sail alone they have the speed of clipper ships. Their draft of water is comparatively light, as there are many shoals in the Amoor river. A great quantity of machinery, such as saw mills, are to be taken out in these vessels for the Russian settlements, as it is believed that a considerable trade in lumber can be carried on between those regions and California. The Russians by this movement have exhibited a great amount of enterprise and sagacity. We have no doubt but their trade on the Pacific coast will soon become very lucrative, if well conducted; and the good sense which induced them to come among us to get these steamers built, affords very good grounds for their future success.

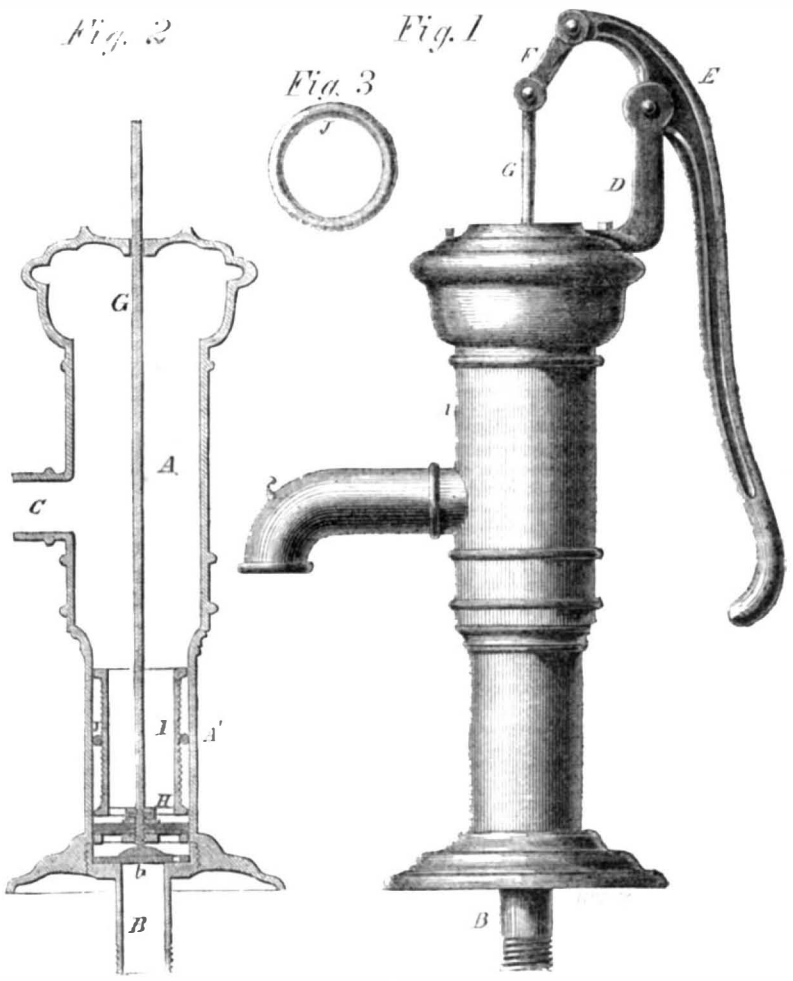
### Stalactites.

At a recent meeting of the Boston Natural History Society, Professor Wm. B. Rogers stated that, a number of years since, he had made some experiments in the stalactite caverns of Virginia, for the purpose of obtaining data in regard to the age of these deposits. He placed vessels in an unfrequented part of the cave, beneath drippings of various dimensions, where they remained for a period of from five to seven years. He arrives at the conclusion, as the result of his observations, that the rate of accretion is one-tenth of an inch in five years, or an inch in fifty years. As there are several feet of accumulated deposit in some places, he thinks that the process must have been going on for at least five thousand years.

### Polytechnic School in New York.

The directors of the Mechanics' Institute, in the Fourth avenue, New York, having met with such success in their endeavors to provide a means of obtaining a good, sound and practical education for the young mechanics of this city, have now determined to extend their usefulness by founding a school under the above title. In this school will be taught *practical* truths and useful facts; the pedantry of science is to be avoided, and simple knowledge placed before the learner in an interesting and attractive way. Professor Mapes, the agriculturalist, seems to be the life and soul of this scheme, and we wish him success.

## UNDERWOOD'S IMPROVED PUMP.



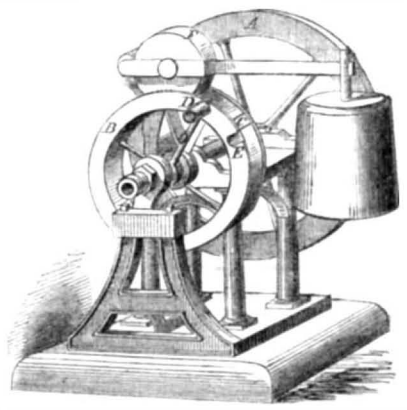

The great and common nuisance of pumps' packings wearing out, and the consequent stoppage of the pump, is by this invention almost entirely avoided, and that by a most simple and cheap contrivance. A ring of india rubber forms the piston packing, and as this as it wears is almost entirely self-repairing, it will last for a great length of time; and when it is actually worn out, another can be cheaply obtained and fitted in a few minutes.

In our engravings, Fig. 1 represents a side elevation of the pump, Fig. 2 is a section of the same, and Fig. 3 is a view of the packing ring detached.

A is the body of the pump, narrowed at A′, to admit of the accurate working of the piston. B is the induction pipe, and C is the spout or eduction pipe. From the top of A there rises a short standard, D, which forms a fulcrum for the handle, E, that is connected by a link, F, with the piston rod, G. This piston rod supports and moves the suction valve, H, at the bottom of the hollow piston, I, between the outer edge of which and the inner side of the case, A′, the ring, J, works up and down as the piston is elevated or depressed. The outer edge of I being serrated, prevents the ring dropping down, and always keeps it in its proper place. There is also, as is usual, a valve, *b*, at the top of the induction pipe, to prevent the water running back. This method of packing can be attached to any and every kind of pump whose piston has an up-and-down or horizontal motion.

This valuable and simple contrivance, which must recommend itself by its cheapness and perfection, is the invention of John Underwood, of Lowell, Mass., and was patented by him December 9, 1856. Any further particulars can be obtained by addressing B. F. Dean & Co., agents and manufacturers, 208 Broadway, New York.

### Novel Rotary Steam Engine.



The accompanying illustration represents an ingenious rotary engine, which we have copied, and translated the description from Dingler's *Polytechnic Journal*, published at Augsburg, Germany.

The cylinder of this engine requires no boring out, there is no piston, no slide or exhaust valve, and, in fact, no sliding friction—the friction of the journals excepted.

On the shaft which carries the fly wheel, A, a pulley, B, with two projecting flanges, is rigidly fastened, and between the two flanges an india rubber tube is placed all round the pulley, B; one end of the tube is closed by a plate, C, while the other end communicates with an opening, E, in the side of the pulley. A roller, F, presses the tube down, so that no steam can escape between the roller and the pulley. If steam is admitted between the roller, F, and the plate, C, the pulley, B, begins to revolve, and the plate, C, recedes from the roller, F, until the whole tube is filled with steam. As soon as the roller comes on the top of the plate, C, the steam from the tube escapes through the exhaust port, E, and so enables the wheel to keep on rotating. Steam is admitted through an arm, D, and it is hardly necessary to state that the shaft is hollow, except that part on which the pulley, B, is fastened; and one end connects with the steam pipe, while the other serves to exhaust. In order to lessen the friction, the roller, F, can be made to press from below.

We illustrated a pump which worked on this same principle on page 324, Volume XI, SCIENTIFIC AMERICAN.

### Yellow Metal Ship Fastenings.

R. Armstrong, directs the attention of the public, through the London *Mechanics' Magazine* of April 10th, to the unreliable character of the above-named fastenings for ships. He mentions the articles which appeared in the SCIENTIFIC AMERICAN (Vol. X) on this subject. In the repairing of vessels bolted with yellow metal, he has observed that in every instance where it has been in a vessel for five years, it had lost its ductility, and was, therefore, totally unfit for ship bolts. At various times he has personally called the attention of Lloyds' surveyors to this, but they have still classed vessels "A 1, 13 years," while he can safely assert, from experience, that four years are amply sufficiently to destroy the ductility of their bolts. He gives the British Admiralty credit for standing above the mercantile marine on this question—nothing but pure copper bolting being employed in the navy. He hopes the public will now demand that something positive be done to prevent the use of such ship fastenings. We hope that neither bolts nor sheathing of yellow metal are now employed by our shipbuilders—this metal being totally unfit for use in shipbuilding.

### A Bridge Broken.

Not very long ago, a bridge crossing the river Severn, in North Wales, fell in, and one man lost his life. At the inquest the jury gave the following excellent and practical verdict:—

"We find that the death of Richard Grist was caused by the falling of the Caerhowell suspension bridge on the river Severn, that bridge not having been constructed or maintained in such a manner as to afford security to life and safety to property passing over in the ordinary way of traffic; that some of the defects consisted in the inferior quality of the iron, and workmanship badly performed—circumstances which might have been avoided had there been proper supervision by a person acquainted with the original plan and mode of construction. We feel it a duty not to separate without expressing our opinion that the present fatal catastrophe shows the necessity of greater vigilance on the part of the county authorities, and that safety and durability, rather than economy, should in future guide them in all public works."

Might not our American jurors and engineers learn from this?

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The twelfth annual meeting of this association met at Baltimore on the 28th ult. We shall be able to give an epitome of their proceedings next week.

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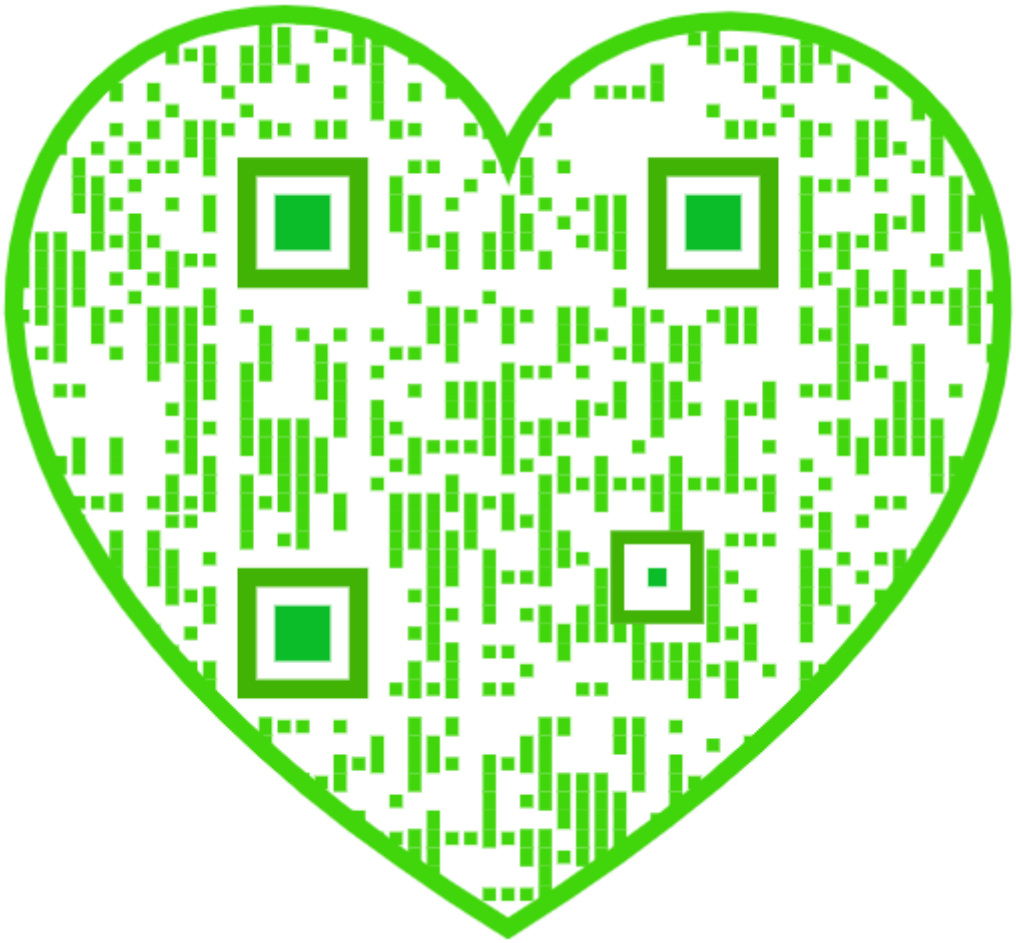

**Issued from the United States Patent Office**

FOR THE WEEK ENDING APRIL 27, 1858.

[*Reported officially for the Scientific American.*]

REVOLVING RETORTS FOR DISTILLING COAL, &c.—David Alter and S. A. Hill, of Freeport, Pa.: We do not claim originality or novelty in the use of cylindrical metallic retorts for dry distillation, nor yet do we claim the use of such retorts, so constructed as to be capable of being shifted on their axis from time to time so as to expose a different portion of the retort to the action of the fire at each successive change, for the purpose of preventing the retorts burning out so soon, as seen in Gengembre's patent.

But we claim the use of retorts, so constructed, as before described, as to revolve continuously on their axis during the process of distillation, substantially in the manner and for the purpose set forth.

IMPROVED LOCK—Ludwig Baier, of Cincinnati, Ohio: I claim the combined arrangement of the tumblers, c c c c c, and d, guard plate, J, T-piece, i, with the bolt, B, all for the purposes mentioned and represented in the spec fication.

INKSTANDS—J. M. Batchelder, of Cambridge, Mass. : I claim an inkstand having a central dipping cup, with an exterior screw, by which it is raised and depressed, causing a corresponding rise and fall of the ink in the stand as the plunger enters and leaves it, the combined screw, dipping cup and plunger being made in one piece.

MILLSTONE DRESS—Franklin Belinger, of Lockport, N. Y. : I claim the furrows, C, cut into the stones tangentially with the eye, D, and gradually diminishing both in depth and width, from the eye to the periphery where they terminate in points, the space between the circle, a, and eye, B, of the runner, A, being inclined or made open, substantially as and for the purpose set forth.

RICE HULLERS—H. N. Black, of Philadelphia, Pa. : I claim, first, The employment of an elastic covering for forming one of the rubbers of a huller composed of alternate layers of cloth and vulcanized rubber, the outer surface of which is formed by incorporating with the vulcanized rubber emery or other hard and gritty material, when the same is combined with an adjacent rubber of metal or other hard unyielding material with a grinding or breaking surface for the purpose set forth.

FURNITURE CASTERS—H. D. Blake, of New Hartford Center, Conn. : I am aware that the spring and groove have been employed before—a groove being made in the plate or socket tube, the spring secured in it, and catching on the groove made in the pin—but this is inconvenient and expensive, hence I do not claim the spring or the groove, my claim being confined to the manner of securing and arranging the groove and spring for the purpose of making a cheaper article to the trade.

But I claim the described arrangement of the several parts of the caster constructed and operated in the manner and for the purpose fully set forth.

APPARATUS FOR BEATING EGGS, CHURNING AND THE LIKE PROCESSES—Wm. Borrman, of Cincinnati, Ohio : I claim, first, The semi-spherical open work dasher, C, in the described combination with a bowl, A, of corresponding form and size, for the purposes set forth.

Second, In connection with the above, I claim the inverted cup, B, adapted to receive the egg or other matter as it becomes sufficiently beaten and retain it beyond the reach of the dasher.

ATTACHING SHAFTS TO VEHICLES—J. A. Boyce, of Monroe, N. Y. : I claim attaching the shafts or poles to the axles of carriages or other vehicles, by means of the combination of fastenings, as described, namely, the bolt connection, and the projections, c c, on the pieces, b b, made to bear against the depressions, d d, in the double concave ring, e, the whole being constructed and arranged in the manner and for the purpose set forth.

APPARATUS FOR EVAPORATING BRINE—Dennis Brigham, of New York City : I disclaim all the separate parts of the described apparatus.

But I claim the arrangement of the stream heaters, N 1, N 2, N 3, N 4, with the boiler, B B', pans, c 1 c 2 c 3, and cistern, D, respectively, in the manner set forth and for the purpose specified, so that the pans and cistern may be heated by one stream pipe, K 1 K 2 K 3, substantially as described.

MOWING MACHINES—T. D. Burrall, of Geneva, N. Y.: I claim the auxiliary frame, r, and caster wheel, w, forming a carriage to which the animals are attached by a loose pole, when combined with the sector, s, lever, t, and standard, v, as specified, whereby the forward part of the main frame, a, and the cutter bar, d, are elevated or depressed on a line between the caster wheel, w, and main wheel, b, substantially as and for the purposes specified.

MACHINE FOR CUTTING SCREWS—P. Chapin, of Baltimore, Md. : I claim, first, The employment of a cutter carriage, D E, constructed substantially as described, with two branches, one of which, z, is movable, and so constructed, mounted and arranged as to embrace the prepared material, and the driving screw, F, at the same time and by the same movement,

Second, The combination of the carriage, D E, the driving screw, F, and the adjustable gear, K I G, for the purpose of cutting threads in wooden screws, as described.

Third, The employment of the hollow binders, d, for the purpose of securing the cutters, S i, in proper positions for the forming of wooden screws.

DEVICE FOR TURNING DOWN THE EDGES OF ELASTIC CLOTH—G. H. Chesbro, of Stafford, Conn.: I claim the plate, B, constructed and operating as described for the purpose of turning the edges of the face side of the cloth over as it passes between the compressing cylinders.

STRAW AND STALK CUTTERS—P. S. Clinger and Cyrus Cremer, of Conestoga Center, Pa. : We do not claim the invention of a revolving cylinder or stationary concaves with knives, teeth or spikes, but we are not aware that they have ever before been combined, for the purpose specified.

What we claim is, the revolving toothed cylinder, H, armed with knives, B, and spikes, C, in combination with the stationary knives, A, and toothed concave, E, constructed to operate conjointly as and for the purpose set forth.

JOINT FOR SPECTACLE FRAMES—G. N. Cummings, of Hartford, Conn. : I claim the double conical shaped tube joint to spectacles, in the manner substantially as set forth and described.

APPARATUS FOR MANUFACTURING SULPHURET OF CARBON—Edouard Deiss, of Paris, France. Patented in France, Nov. 13, 1855 : I claim, first, The placing of the retorts over the principal flue in order to obtain an intense heat at the base of the retorts.

Second, The earthen retorts in combination with the crucibles or pot placed either within or outside the retorts for the object and in the manner set forth.

Third, The grate, C, for supporting the charcoal and tube, E, or its equivalent for feeding in the sulphur in combination with the crucible or retort forming a chamber for the purpose described.

CARD PRINTING PRESS—Wm. W. Clarkson, of Baltimore, Md. : I claim, first, The combination by the peculiar arrangement of mechanism specified, of the slide, D, which feeds the cards singly from the card-box, the bed plate, B, which supports and carries the impression form, and the inking roller, C, which inks said form, substantially as and for the purposes set forth.

Second, The combination of the vibrating slide, D, which feeds the cards singly with the groove guide, F F, which receive and retain the cards below the platen, and directly above the impression form while being printed, substantially as and for the purposes set forth.

Third, The peculiar manner of adapting the card-box, F', for cards of different widths, lengths, and thicknesses, to wit, by having its side front and back boards or strips adjustable laterally, perpendicularly and longitudinally by means of slots and set-screws, substantially as and for the purposes set forth.

[A description will be found on another page.]

FROGS FOR RAILROAD CROSSINGS—E. T. Conner, of the Borough of East Mauch Chunk, Pa. : I claim, first, The construction of a frog with a central part, B, raised above and projecting over the bar, C, and also the ledges, D D, in combination with the frog descr bed, for the purpose of securing to the frog and making use of, in combination with the frog any ordinary rail used upon railroads, substantially as described.

Second, The wedge and dove-tail shaped cavity, E, in the central part, B, in combination as aforesaid, for the purpose of securing the point, A, substantially as described.

Third, The cavities or depressions, F G, and F ′ G', in the base, C, in combination as aforesaid for the purposes substantially as described.

Fourth, The wedge and dove-tail shaped point, A, to fill the cavity, E, in the central part, B, so constructed that the same can be removed for repairs and removal in the manner described.

BREECH-LOADING FIRE-ARM—Calvin Cox, of Coxville, N. C. : I do not claim the magazine, neither do I claim a sliding carrier, nor do I claim the combination of both.

But I claim the arrangement of a blade or cutter, K, in the rear part of the breech of the firearm, for use in combination with a bored sliding cartridge carrier, and cartridge magazine, the whole constructed, arranged and operating in the manner specified.

[This fire-arm is of that character wherein the cartridges are supplied automatically from a magazine arranged below the barrel. The present improvement is designed to render practicable the firing of common paper cartridges. To accomplish this, a thin pointed blade is placed in the rear part of the breech, and as the cartridge is brought up from the magazine by the sliding carrier, said blade splits open the rear end of the cartridge and exposes the powder thereof, so that it shall be readily ignited by the explosion of the cap. This is a simple but ingenious and useful device.]

RAT TRAP—Wm. H. Cox, of Verden, Ill. : I claim the sliding case, B, placed on the bed piece, A, which is rovided with end-pieces, a a, and partitions, b b, the case being operated by means of the spring, G', shaft, E, cross arm, F, arbor, G, connected with proper triggers, p, substantially as and for the purpose set forth.

[This is a sliding box or case operated by a spring and retained by proper catches, a stationary chamber, and a bed piece provided with upright end pieces, the whole being so arranged that, by means of a spring, the trap is rendered self-setting, and the animals as caught are retained in a proper chamber, without interfering with the operation of the trap.]

MACHINE FOR MAKING WASHERS—R H. Cole, of St. Louis, Mo. : I claim the loose bottom, u, and the spring, v, in connection with the die, m. the said bottom and spring to be arranged and constructed substantially in the manner set forth for the purpose specified.

LOOMS—George Crompton, of Worcester, Mass. : I do not wish to be understood as limiting my cla m of invention to the special construction specified, as the same end may be obtained by equivalent means.

I claim the employment of the two bars for holding up and holding down such of the series of jacks as are not required to be elevated or depressed at the forming of any shed, substantially as described, in combination with the jacks, the pattern cylinder or chain. and the lifter and depresser, substantially as and for the purpose specified.

And I also claim the holder bar, which acts on the ends of the heddle levers to hold them in their elevated or depressed position until the beginning of the operation of opening a shed, substantially as described, in combination with the two bars for holding up and holding down such of the jacks as are not required to be shifted during the operation of opening a a new shed, substantially as and for the purpose specified.

BLOWING APPARATUS—David Cumming, of Sorrel Horse, Pa. : I claim, first, The bellows, B, in combination with exhaling bellows or receiver. C, when the former and latter are compressed by springs or weights of different capacities, in proportion to the exits of the said bellows, for the purpose of producing an uniform blast, as described.

Second, The arrangement of the bellows, B and C, on the base, A, with the channel, D, valve, A, orifice, E, and valve, b, and exit, c, essentially as described for the purpose set forth.

PROCESSES FOR EXTRACTING FATTY MATTERS—Edouard Deiss, of Paris, France. Patented in France, Nov. 13, 1855 : I declare that I do not in any way confine myself to the particular construction and arrangement of apparatus in connection therewith.

But I claim the extraction of oils, grease, fats and resins from wool cloth, bones, oleaginous seeds, refuse, and other substances containing the same, whether naturally or artificially impregnated, by passing through them mechanically sulphuret of carbon, in the manner substantially as described.

COTTON SEED PLANTERS—J. T. Donovan and W. J. Fowler. of Seguin, Texas : We claim the combination of notched wheel, W, shaft, C, arms, a, and depending brushes, b, thereof, with the circular hopper, the whole arranged for joint operation as shown and described.

HARVESTERS—R. Dutton, of Dayton, Ohio : I claim the employment of the loose hollow sliding sleeve, G, between the hub of the driving wheel, and the short axle, F, in combination with the slotted segment, C, on the side of the platform, and the adjustable axle, F, when the slotted segment is provided on one of its inner sides with the cogs, c, and the axle with pinion, b, on its inner and screw thread, f, and adjusting jamb nuts, h i, on its outer end, the several parts being arranged to operate substantially as and for the purpose set forth.

[This invention is designed to facilitate and render convenient the raising and lowering of the platform and cutter bar of reapers and mowers. With it, by simply applying a key to the end of the axle of the driving wheel and turning the same, the platform can be raised or lowered to any position with very little labor, and with the same facility that a watch is wound up. We regard this as a most excellent contrivance, it being simple, conveniently located, and not liable to derangement.]

COTTON GINS—John Du Bois, of Greensboro', Ala. : I claim the use of the flange, b, on the face of the rib, constructed, arranged and operating in the manner described, that is to say, the flange situated opposite the lower edge of the hopper, board, c, with the lower end extending below that point to separate the ginned seed from the cotton and facilitate their passage from the roll box.

HATCHET—N. F. English, of Hartland, Vt. : I claim forming the claw, b, at the outer edge of the hatchet and over the eye or end of the handle, C, substantially as and for the purpose set forth.

[See a description in another portion of this paper.]

TWEER—G. W. Finch, of Gibraltar, Wis. : I do not claim separately, or in themselves considered, any of the described parts.

But I claim the use of two hollow cylinders, A and E, in combination with the slotted opening, C, and the outlets, a b c, or more, if necessary, of varying forms and sizes : all arranged to operate substantially as and for the purpose set forth.

CABBAGE CUTTER—Adam Fischer, of Dayton, Ohio : I do not claim a horizontally revolving disk set with knives and gage plates, neither do I claim the partitioned hopper or upper section, C ; nor do I claim, broadly, controlling the fineness or coarseness of the cut of knives.

But I claim the cabbage cutter specified, where all its parts are constructed and arranged for united operation, substantially as and for the purposes set forth.

[This machine consists of an upright stationary cylinder, said cylinder being divided into two compartments by a horizontal disk, which carries two knives or cutters. The cabbage to be cut is placed in the upper section of the cylinder, and held stationary by a stop-board while being cut to any desired degree of fineness by the knives which are caused to revolve rapidly by means of a crank and two bevel wheels, the cut cabbage escaping into the lower section of the cylinder, and discharging automatically into a receiver. This is a simple and good machine, and its advent doubtless will be hailed with pleasure by the lovers of good "sour krout."

RULER—Thomas Fisher, of Camden, N. J. : I claim the application to rulers of india-rubber, which will prevent the ruler from slipping, as described, using for that purpose the aforesaid india-rubber or any other article substantially the same, and which will produce the intended effect.

PENCIL SHARPENER—W. K. Foster, of Bangor, Me. : I claim as an improved article of manufacture a pencil sharpener made substantially as described, that is, of a steel or cutting blade, and a cast-metal body, as specified, cast or founded on the said blade so as not only to confine it in its proper place with respect to the conical cavity of the body or holder, but so that the metal of the body or holder shall embrace opposite sides and the back of the blade, and terminate at or near the cutting edge of the blade, by a surface made to stand at a right angle or thereabouts to the outer surface of the knife, the same, when the instrument is in use, serving not only to support the knife under pressure against its inner surface and cutting edge, but also to turn a chip or shaving so as to enable the sharpener to operate to great advantage on the lead and wood of the pencil, particularly when the wood is cross-grained.

BUFFER HEADS FOR RAILROAD COUPLINGS—M. C. Gardner, of Rochester, N. Y. : I claim the peculiar shape of the wrought iron bar and cast iron blocks described, whereby the whole may be easily and firmly united by means of the band B, Fig. 3.

LIQUIDS FOR GAS METERS—H. P. Gengembre, of Rock Island, Ill. : I do not claim replacing water in in wet gas meters by a liquid not affected by frost, as I am aware that alcohol has been employed for that purpose, nor do I claim keeping a salt solution neutral by the presence of a base or carbonate.

But I claim the use of an aqueous solution of delequescent metallic and earthy salt or salts in gas meters and the suspension in the upper stratas of the liquid of a base, or carbonate of the base, of the salt or salts employed, substantially in the manner and for the purpose as set forth.

ROOFING TILES—J. F. Grassle, of Hamilton, Ohio : I claim the groove, e, in the outer tongue, b, the perforated flange, F, shallow groove, d, and flange, f, of recess, R, in combination with the pin, P, and lap of the adjacent tile, substantially as and for the purpose set forth.

I also claim the combination of the double grooves, a a', in the lap, tongues, b b', flanges, f f', f'', recess, R, and shallow groove, d, operating together as and for the purposes set forth.

PUMP COUPLING—S. H. Gray, of Bridgeport, Conn. : I claim the curved or low-shaped bar, D, fitted underneath the lugs or projections, I I, on the base, A, and bearing on the flanch, b, of the cylinder, B, the bar, D, being adjusted by a thumbscrew. E', or its equivalent. It being understood that I do not claim any of the above named parts separately or in themselves considered, but the whole when arranged and applied to a pump for the specific purpose set forth.

[This invention consists in the employment of a curved or bow-shaped bar fitted underneath lugs attached to one of the parts to be connected, the ends of the bar resting on the other part, or on a flanch connected therewith, and in line with its center. The bar being adjusted or set by means of a screw, so that the parts will be firmly secured together, and allowed while the bar is being set, to adjust themselves so as to fit snugly and water-tight.]

RAKING ATTACHMENT FOR HARVESTERS—George V. Griffith, of Sandusky, Ohio : I do not claim separately any of the parts described, for I am aware that reciprocating and rotating rakes have been previously used, but I am not aware that a reciprocating and rotating rake combined and operated as shown have been used.

I claim the rotating rake, F, and the reciprocating rake, P, combined and arranged to operate conjointly as and for the purpose set forth.

I also claim the particular manner of operating respectively the rakes, F P, as described, to wit, through the medium of the grooves or guides, G G, gearing, I J, which connect the two shafts, C K, and the crank k on shaft, K.

[A revolving and intermittingly reciprocating rake is employed in this invention placed relatively with each other, so that the planes of their movements are at right angles with each other, and they are so operated that the revolving rake is made to carry the cut grain from the front of the platform, when the other rake, in consequence of its intermittent motion, discharges the grain in gavels upon the ground.]

CHURN—T. B. Harper, of Xenia, Ohio : I claim the combination of the pinion, H, disk, L. and pin, h, constructed and arranged as described, and operating in relation to the winch, I, and dashers, B C, in the manner and for the purpose specified.

LOCK FOR DOORS—James J. Hamilton, of New Castle, Ind. : I claim, first, The slides, G G, constructed arranged, and operating substantially as described.

Second, The double lift, E, constructed and operating as described.

COTTON HARVESTERS—Miles Hosford and J. C. Avery, of Macon, Miss. : We do not claim an endless belt of pickers placed within a case or frame, and so arranged that it may detach the cotton from the bolls, for such device has been previously used.

But we claim operating the endless chain of pickers, B, through the medium of the pulley, D, spring, F, wheel, G, ratchets, H I, with pawls, k k, and the gearing, k k' k'' j and L L', or any equivalent device, whereby a reserve power is obtained as the inplement is moved from boll to boll so that the cotton may be picked or gathered therefrom as the implement is adjusted to the bolls.

[An engraving and description of this will be found on another page.]

COMBINATION COOKING RANGE AND GAS GENERATOR—A. Hendrickx, of Morrisania, N. Y. : I claim the arrangement embracing a cooking range, which has two fire chambers, B B', two draft flues, D D', and appropriate dampers, when used in connection with a gas retort opening on the outside of the room, substantially as, and for the purposes set forth.

[This invention is designed to render available the employment of the surplus heat of a cooking range for generating the gas used by families, and thus enable every family to make its own gas without additional expense for fuel and retort stands. With this arrangement of retort it is not necessarily exposed to the destructive action of the fire but once a week or every fortnight, and thus is saved from being soon burned out. The necessity of opening the retort on the inside of the room wherein the range is located is overcome, and thus the cooks or managers are saved from the almost suffocating fumes escaping from the retort door when opened. The whole arrangement is a perfect safety, and admirably adapted for the purpose above stated.]

PEN CLEANER AND HOLDER—Thomas S. Hudson, of Boston, Mass. : I claim forming the inside of the stand with a tapering or beveled-shaped neck, through which a bunch of bristles is drawn, as described, whereby, when the bristles are fastened at their lower ends with cement or glue, they are so rigidly held as to prevent their being drawn out or displaced.

I also claim, in combination with the above, the use of a hollow stand, the lower portion or base of which is fitted with plaster of Paris, or other non-conductor of heat, whereby the cement or pitch in which the bottom of the bristles is embedded, is protected, and prevented from being softened or melted by heat, as set forth.

CORN HARVESTERS—Adam Humberger, of Somerset, Ohio : I claim the described corn carrier and shucker, provided with pulleys, C, interlocking at pleasure with wheels, B, in connection with the rope, S, said pulleys being operated by lever, E, and rods, e, for binding and shucking corn, the whole being constructed, arranged and operated substantially as set forth.

STEAM WARMING APPARATUS—E. E. Ingalls and J. R. Nichols, of Haverhill, Mass. : First, We claim the device as set forth for increasing or diminishing the capacity of the fire chamber, so as to maintain a larger or smaller amount of fuel in a state of combustion.

Second, We claim vessel I, in connection with flexible pipe, J, and spring, L, operating together as described, for controlling a valve or valves affixed to boilers for regulating steam pressure.

We disclaim so connecting this arrangement as to control dampers in the smoke flue and draft in the manner embraced in C. Devenport's patent, of March 11th, 1856.

Third, We claim the device, constructed essentially as described, for supplying water to the boiler.

Fourth, We claim, in the construction of fluted or corrugated radiators, of thin plates of iron facing across the corrugations, strips of metal securely fastened, and for the purpose as set forth.

HOSE SUPPORTERS—Asa Johnson, of Cairo, N. Y. : I claim the hose supporter, or its equivalent, for the purpose of supporting the hose and giving form to the limb, in the manner specified and set forth.

ELLIPTIC CUSHION FOR RAILROAD CARS—Samuel R. Jones, of York, Pa. : I claim, first, The local relation, and mode of application of the semi-elliptic buffer.

Second, The combination and arrangement of the elliptic cushion, as described, arranged and operating substantially as described and set forth.

FIELD FENCE—Ebenezer E. Lewis, of Geneva, N. Y. : I claim the combination of the panels and posts of a fence, when arranged independent of each other, substantially in the manner and for the purposes set forth.

LIFE AND TREASURE BUOY—Francis D. Lee, of Charleston, S. C. : I claim the arrangement of the escape valves, M M, rods, V V, chain, U, windlass, G, and the air valve, H, and screw, F, on the windlass shaft, to operate in the mannor set forth.

[This invention has been patented in England and France through the Scientific American Agency. An engraving and full description of it will appear in our columns in a few weeks.]

BREECH-LOADING FIREARM—Thomas Lee, of New York City : I claim, first, The breech piece, d, on its center pin, 1, in combination with the lever, e, blocking piece, f, and cam-chaped end, 4, the whole constructed and acting substantially as specified.

Second, I claim the manner described of delivering the detonating pillets, and shutting off fire from the same by the use of the inclined ended rods, 8 and 10, and shield, n, constructed and operating substantially as specified.

CORN PLANTERS—Oliver Lippincott, of Camden, N. J. : I claim the arrangement of the plow, Z', and its beam, B, with frame, A, and its hopper, G, weight, L, slide, N, wheel, E, and covering share, I I', the whole arranged for joint operation, as shown and described.

TOY—Conrad Liebrich, of Philadelphia, Pa. : I claim arranging certain numbers, letters, words, or other signs upon two, three, or more disks, and combining them with certain devices for setting the disks in motion, and stopping them in such a way that after each stoppage the relative position of the disks shall be changed, so as to show a different relative position of those numbers, letters, words, or other signs, upon the circumferences of the disks, and arranging the whole in such a manner that the nature of the change in the relative position of the disks after each stoppage will be a matter of accident, as set forth.

SPIKE MACHINE—Michael Longham, of Pittsburgh, Pa. : I claim the employment of dies, i k and l, constructed, arranged and operated as specified, working on separate shafts, and forming spikes at a single revolution.

MACHINE FOR WETTING PAPER—John A. Lynch, of Boston, Mass. : I do not claim a hollow perforated cylinder through which water oozes, as a similar device has been used for coating the inking roller of a printing press.

But I claim the combination of the wetting cylinder, E, handle, I, and roller, H, as described, the whole constituting a new implement or machine by which the sheet on which the impression is to be taken can be dampened, and its superfluous moisture absorbed by passing the apparatus once over the sheet.

MODE OF PROTECTING GILDING ON GLASS—Peter V. Mathews, of Philadelphia, Pa. : I do not claim anything described in such devices : nor confine my claim to the use of any particular kind of adhesive substance or sizing for causing either the gilding or the metallic backing to adhere to the glass or to each other, as described.

But I claim the use of the tinfoil, or other thinly laminated or rolled metal, as a backing for the gilded letters, figures, &c., which are generally required on the inner surfaces of the pancs of glass of windows, transoms and doors of stores, &c., for the purpose of securing and protecting the said letters, figures, &c., from being damaged and described, and without obstructing the free passage of the rays of light through the immediately surrounding parts of the glass from either side of the same, as described.

MACHINES FOR MAKING HORSE SHOES—John McCarty, of Philadelphia, Pa. : Without claiming separately the various parts described, I claim, first, The combination of the mandrel with the rollers, 8 8, when the said mandrel is of the same form as that presented by the inner edge of the shoe to be manufactured, when it is so operated as to convey the bent bar to the dies, there retain it while it is submitted to the action of said dies, and subsequently withdraw the formed

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shoe from the same, and when the rollers are caused to approach each other as the mandrel advances.

Second, I do not claim exclusively the employment of opening, closing and reciprocating dies.

But I claim the jaws, Z and Z', the reciprocating mandrel, X, with its projection underneath, the lower die, P, with its recess for receiving the projection of the mandrel, and with its projecting lip, p, and the upper die, k, when the said dies, mandrel and jaws are arranged to close and lap over each other, in the manner set forth, and when they are otherwise, arranged and actuated substantially as and for the purpose specified.

Third, Piercing the requisite nail holes in the shoes by means of the punches, q, when the same are attached to the plates, R and R', when the latter are hinged to the guide blocks, T and T', when the upward movement of the latter is regulated by the adjustable wedges, V, and when the whole is arranged and operated substantially in the manner set forth, and for the purpose specified.

HARVESTERS—J. B. McCormick, of Versailles, Ky.: I do not claim a rod, K, placed on bars and so manipulated by the attendant as to form an adjustable or movable rest or platform for the ready discharge of the cut grain or hemp in gavels, for such device has been used in connection with certain concomitant parts, and was formerly patented by me.

But I claim the separator, H', formed of the bar, H, and rods, d d, in combination the adjustable rod, K, bars, I I', one or more seat, D, and reel provided with concave beaters, when the several parts are constructed, relatively arranged and operated as and for the purpose set forth.

[This is an improvement on the mode of discharging the cut grain or hemp from a machine patented by this inventor June 2, 1857. Its object is to facilitate the manual part of the work or process, so that the material is discharged upon the ground in compact gavels two at a time.]

METHOD OF PREPARING STEREOTYPE PLATES—John McElheran, of Brooklyn, N. Y.: I claim the method described of producing a plate of fixed metallic types for printing from, by stamping letter dies in succession to each other into a plate made of or coated with such a substance as will readily take and preserve their impressions, and allow a stereotype or electrotype to be made thereof either directly or by means of an intermediate plaster cast, whereby the ordinary process of setting and distributing the type is dispensed with, and but one set of types is used, substantially as set forth.

METALLIC SHOE FOR TRUSS BRIDGES—David H. Morrison, of Dayton, Ohio: I do not confine myself to three bearing surfaces, as a very slight modification of the shoe admits of two bearing surfaces for the chord and two for the post.

But I claim the combination of metallic shoes or angle pieces with the several parts of wooden trusses, in such manner that the cuts or gains made in the timbers of the trusses against which the bearing surfaces on the shoe rest are at right angles, or nearly so, to the fibers of the timbers as at a b c, for the purpose of preventing the injurious effects of shrinkage, there being on every shoe at least three such bearing surfaces, one each for the chord, post and brace.

MILLSTONE DRESS—Gabriel Natcher, of Indianapolis, Ind.: I claim, first, The lines, a, upon the upper portion of the inclined plane of the furrow.

Second, The curved or retarding lines, C, upon the breast circle.

Third, The parallel or uniform lines upon the whole surface, running straight or at any desired curve.

Fourth, The combination and arrangement of the various parts above described, making up the complete dress of the millstone, when arranged and operated substantially as set forth.

MILLSTONE DRESS—Gabriel Natcher, of Indianapolis, Ind.: I claim the application of the diamond in the production of the small lines in any required form upon the face of millstones for dressing the same.

METAL AWNING—William O. Parisen, of New York City. I claim the metal plates or strips, B, so arranged that one may overlap the other, and be kept in proper position by guides, b, when said plates are used in connection with toggles, C C, and arms, E E G, and a windlass, I, arranged so as to raise and lower, or fold or unfold the plates, substantially as and for the purpose set forth.

[This invention consists in the employment of a series of metal plates or strips so arranged as to lap one over the other, each plate being fitted between guides which are attached to the lower ends of the plate immediately above it, and the plates connected by toggles while in connection with arms and a windlass, allow the plates to be raised and folded together, when an awning is not necessary, or to fall and be distended when an awning is required.]

COTTON GINS—S. R. Parkhurst, of New York City: I do not claim the ginning cylinder or stripper, nor the combination of the same with the brush blower, each revolving in the directions specified.

Neither do I claim internal gears in themselves.

But I claim the manner described of connecting a ginning or card cylinder with a stripper, by combining with said cylinder and stripper the internal gear, h, and pinion, i, substantially as and for the purposes specified.

ENVELOPS FOR LETTERS, &c.—Charles Phelps, of Salem, Mass.: I claim the application to a letter envelop of an opener, therefore said opener to be attached to, and part of, said envelop, and to be attached and operated substantially in the manner set forth and described.

CONVERTIBLE EXTENSION TABLE—Michael Quigley, of Watertown, Wis.: I claim securing the leaf, A, to the legs, a' a', and leaf, E, as described, for the purpose of forming an extension table, the leaves of which are folded in a perpendicular position, as fully set forth.

Second, The arrangement of the case, C, as constructed with the inclined brackets, c c, for the purpose of forming a convenient receptacle for stationery, and for the purpose of completing the bed of the table when required, substantially as set forth.

CHURN—G. S. Rarey, of Columbus, Ohio: I claim operating or giving the dasher, K, a reciprocating rectilinear motion from the driving rotary wheel, E, through the medium of the pinion, F, crank pulley, F', connecting rod, G, segment, H, and rack bar, I, arranged to operate as shown and described.

[This invention consists in a novel means employed for giving a reciprocating motion to a vertical dasher from a rotating driving shaft, whereby the necessary length of stroke may be given the dasher, and also the requisite speed, with but a little expenditure of power.]

PRINTING PRESS—Thomas S. Reynolds, of Athens, Ga.: I claim, first, The rotating segment, D, in combination with the intermittingly rocking bed, Y, when constructed and arranged to operate as described, to wit, the segment having a continuous rotary movement while the bed rocks to and from the segment, and remaining, while in a vertical, or nearly vertical position, stationary a sufficient length of time to have the form properly inked.

Second, The inking device formed of the fountain, J, and the roller, K L N O t t, operated by the cams, S T, levers, U V, bar, W, and the frame, M, with the weight h, and cam, e, arranged to operate conjointly with the segment, D, and bed, Y, so that the form will be properly inked during the "dwell," or the cessation of the movement of the bed, as described.

Third, The counterpoises, Z Z, when used in connection with the springs, o', as shown, whereby the counterpoises may be graduated as circumstances may require.

Fourth, The frame, F', attached to the shaft, D', which is fitted in the bars, E', and having the spring, u' and rod, w', attached substantially as described, and for the purpose set forth.

[A notice of this invention will be found on another page.]

FLY TRAP—William Riley, of Madison co., Miss.: I claim the shape of the trap, the sliding drawer, as described, the manner in which the triggers are made, as described, the tube which prevents the flies from returning from the bag to the box, the bag and circle by which the flies are destroyed, by detaching the bag and circle from the box, and the glass on the back part of the box, introduced to give light, and lead the flies away from the place of entrance to the bag.

BEDSTEAD RAIL—Charles Robinson, of Cambridgeport, Mass.: I do not claim the employment of a stretched elastic band, supported at intervals by projecting pins, or their equivalents, on which to place the bed or slats, such being liable to objections which my improved arrangement obviates.

But I limit my invention to an elastic support rail, composed essentially of the constituents described, united as a complete, inseparable whole, and unit of construction.

I claim an elastic support bedstead rail, composed of the notched rail piece; A, stretched elastic band, B, and confining or cap strip, C, arranged, combined and operating in the manner and for the purpose specified.

APPARATUS FOR RAISING LEATHER FROM VATS—C. E. Robinson and L. D. Sanborn, of Concord, N. H.: We do not claim the crab machine wholly as our invention.

We claim the manner of taking leather out of tan vats by using hooks, as aforesaid, on a movable frame with copper rods, to be placed in the bottom of each vat before the leather is placed therein, or any way similar to the same, by which all of the leather and bark can be taken out at one time.

STEAM VALVE—Thomas Scott, of San Francisco, Cal.: I claim the reciprocating or revolving valve, substantially as described, whereby the steam enters at or near the axial center of the valve, and is thence conveyed obliquely through the valve to the cylinder, the valve and hollow stem united, and acting as a rock-shaft or center.

CONSTRUCTING COFFINS—Isaac C. Shuler, of Amsterdam, N. Y.: I claim, first, The combination of the self-securing frame, H, with the catch on the false head-piece, B, operated by the spring, C, as a cover over the joints after soldering in the top of a metal coffin.

I claim, second, The arrangement of placing inside of a metal coffin, near the upper edge of the walls, the iron frame, E, or its equivalent fastening it securely, for the purpose of shaping permanently the upper part of the body of the coffin, exactly like the beaded frame, D, at the bottom, and as a means of securing a close joint on the top for soldering the same to the walls of the coffin. Also for the purpose of supporting the top on a line sunk somewhat below the upper edge, sufficient to leave an extension or projection of the metal all around the upper edge of the walls above the coffin-top, when fixed in its proper place. This extension of the metal which shows itself above the frame, E, is made expressly for the purpose of soldering on the coffin top without using the lap or lock joint.

I claim, third, The false head-piece, B, and the spring C, or its equivalent.

PADDLE WHEEL—Nathan Smith, of Berwick, La.: I claim, first, The fitting of the two paddle hubs with their arms, D D D' D', to the shaft, and the attachments of the buckets to the arms in such a manner that either hub may be permitted at pleasure to be turned upon the shaft by the pressure of the buckets upon the water, for the purpose of adjusting the buckets obliquely in either direction to the shaft, and of returning them to a position parallel with the shaft, substantially as described.

Second, The employment of the bolts, j j, and a system of levers and sliding collars, G G', applied substantially as described, in combination with the loose paddle hubs, C C', and fast hubs, E E', with their corresponding holes, for the purpose of liberating the hubs from, and securing them to, the shaft, to permit and secure the adjustment of the buckets.

[See another page for a description of this improvement.]

BEDSTEAD—Noah W. Spears, of Cincinnati, Ohio: The connection of the posts at top gives additional strenth, but I do not intend to confine myself thereto in all cases, as the other features of my invention may be successfully used in the construction of bedsteads with short posts.

I claim, first, The bent posts, A, in combination with the clamp, B C, or substantially equivalent device, by which they are connected at top.

Second, The outside encircling rail, D, for supporting the posts and fastening the various parts together.

Third, The construction and arrangement of the corner fastening, F, in the described connection with the rails and posts, for the purpose explained.

LEATHER SLICKER—H. Lee Sultzbach, of Marietta, Pa.: I claim the arrangement of the bolt, B, with the blade, D, operated by the knob, A, and spring, or its equivalent, in the manner and for the purpose specified.

WASHING MACHINE—Charles M. Swany, of Richmond, Ind.: I do not broadly claim either set of rubbing surfaces shown: when separately considered, as analogous devices are separately in use.

But I claim, first, Such a construction and arrangement of the disk, B, and rubber case with the tyb, that the disk and rubber case are free to move in opposite directions simultaneously, the above being made and fashioned substantially as shown and described.

Second, I claim the manner shown of arranging the rubbers or ribs upon the horizontal rubbiug surfaces of the disk and rubber case, for the purpose of keeping the clothes in place during the process of washing.

DRAWER FOR CLOSETS, BUREAUS, &c.—H. R. Taylor, of Roxbury, Mass.: I claim the sliding pieces, C, or their equivalents, connected with the drawer and operating in the manner substantially as set forth.

WASHING MACHINE—Edmund Tharp, of Cincinnati, Ohio: I claim the arrangement and combination substantially as set forth, of the vertical rotating disk, D, and quarter spherical trough, C, for the purpose explained.

MILL FOR GRINDING PAINT—Chauncy Thomas, of West Newbury, Mass.: I claim the combination of the forcing pump (or its equivalent) with the grinder or mill for grinding paint, and so as to operate therewith, substantially as described.

I also claim the mode of combining the piston with the mechanism or means of elevating and depressing it, that is to say, by such a mechanical device or devices as will not only allow the piston to be elevated out of the pump, but swung laterally out of the way or beyond the mouth of the pump, when receiving the material to be ground.

STRAW CUTTERS—John Tittle, of Johnstown, Pa.: I claim the arrangement, substantially as shown, of the knife, G, with its arms or levers, F F', when connected for operation conjointly with the feed rollers, I J, pressure bar, K, and feed box, A, in the manner and for the purpose set forth.

I also claim in combination with the lever, n, pawl, m, bar, o, and curved portion, r, the sliding bar, M, arranged as shown for the purpose specified.

SMUT AND GRAIN CLEANING MACHINE—Jeremiah Tobin, of Newark, N. J.: I do not claim the scourer, O, for that has been previously used.

Nor do I claim the screws, C C, separately considered.

But I claim, first, the blast passage formed by the cylinder, J, and case, K, arranged as shown in connection with the rotating basin, L, or an equivalent device for the purpose of properly presenting the grain to the action of the blast in said passage, substantially as and for the purpose shown and described.

Second, The screws, C C, fan, I, scourer, O, blast passage, P, cylinder, J, and case, K, when combined and arranged to operate as and for the purpose set forth.

[A notice of this invention will be found in another column.]

FRAMES OR CAISSONS OF BREAKWATERS, &c.—Edward H. Tracy, of New York City: I claim constructing the frames, A, of breakwaters with longitudinal compartments, C D, two or more, the inner compartment or compartments being provided with a flooring or bottom, E, and the outer compartment being open at its lower end, substantially as and for the purpose set forth.

[A notice of this improvement will be found in another column.]

WARM AIR REGISTERS AND VENTILATORS—Edward A. Tuttle, of Brooklyn, N. Y.: I do not claim any feature seen in the device of W. G. Cook, 1848, S. P. Munson, 1853, or the patent of George Pollock, 1847.

But I claim an improved article of manufacture—a warm air register made as herein set forth, viz., the frame, B B, having lugs, l l, and recesses, f f, and the end pieces, C, provided with lugs, e', for the reception of screws, k, the ledge or step and openings, p' p' p', for the leaves, all substantially as shown, when combined with a mechanism for operating the leaves.

BRICK MACHINES—Stephen Ustick, Philadelphia, Pa.; I claim, first, the combination and arrangement of the filling box, E'', scraper, E''', and guides, b' b', or their equivalent, as an improvement on the filling box, E'', in the machine, for which Letters Patent were granted to me on September 8th, 1857, when said parts are constructed and arranged to operate substantially as described.

Second, The piston, K, and plunger, K''', combined and arranged to operate in the manner and for the purposes set forth, the plunger, K''', being operated by the spring, K, or its equivalent.

Third, The grooves, l', in the facing, l, of the piston, K', and the grooves, m', in the facing, m, of the plunger, K''', constructed substantially as described, for the purposes above stated.

Fourth, The curved piece, U, in combination with the segmental piece, v, and pin, n, arranged as described.

SUPPLYING TENDERS WITH WATER AT RAILROAD STATIONS—B. M. Van Derveer, of Clyde, N. Y.: I claim the application of the described pipes to the water houses of railroad stations, or to any other place for the same purpose.

I also claim the combination of these pipe heads and pipes, acting upon one bore or nipple, in the manner shown and described.

I disclaim the hinged joint.

BRICK MACHINE—I. Z. A. Wagner, of Philadelphia, Pa.: I claim, first, molding and pressing bricks by means of the two rotating wheels, C C', and hopper, H, or its equivalent, the wheels having their peripheries notched or recessed as shown, so as to operate substantially as and for the purpose set forth.

Second, Having the hopper, H, formed of two parts and arranged substantially as shown in connection with the plates, I I', so that the sides of the hopper and the plates may be adjusted to the wheels to prevent the escape of clay between their ends and the sides of the hopper and plates.

Third, Pin, L, operated from the wheel, J, by the rod, K, with its wedge, a, and spring, l, substantially as shown, where said pin is used in connection with the molding and pressing wheels, C C', and hopper, H, or its equivalent substantially as and for the purpose set forth.

[An engraving and description of this invention will be found on another page.]

GENERATING CARBONIC ACID GAS—Thomas Warker, of New York City: I claim the bottle, E, and chamber, D, connected together provided with the ball valve, g, so that communication is obtained between the chamber, D, and bottle, E, by the tilting or inclining of the same, when these parts are combined with and applied to the receiver, A, in the manner and for the purpose substantially as specified.

[See description in another column.]

APPARATUS FOR DAMPING PAPER—C. A. Waterbury, of New York City: I am aware that tablets are in use made of wood and metal for copying letters which are dampened by means of a brush or substitute, and also by dampening the leaves of the book with a brush or substitute before the letters are put therein, I disclaim the use of any such process.

But I claim, first, the application of one or more tablets when kept in a wet state for the purpose of taking copies of written letters and other documents substantially as described in the specification.

Second, I claim the use of wood or other substances, when used as copying tablets, for the purposes in manner and form substantially as aforesaid.

Third, I claim the use of the case or substitute, which contains the water and tablets, when used in connection, for the purposes substantially as aforesaid.

FOLDING MATTRESS—Wm. Wells, of Harrisburgh, Pa.: I claim the inclined seats of the hinge, B, on which seats the hinge is fastened for the purpose of folding the mattrass in the manner set forth, and the purposes specified.

MACHINE FOR WASHING BOTTLES—W. B. White and John Whitford, of Saratoga Springs, N. Y.: We do not claim generally the washing of bottles by causing them to rotate against stationary inside or outside brushes as that device has been used before, and is well known.

Nor do we claim any particular form or arrangement of brushes.

But we claim, first, the series of devices described including the pulleys, D and D', the clutches, E E', the collar, F, the radial arms, G G, the springs, H H, and the gripers, I I, with the parts connected, constructed and operating substantially as set forth, whereby the bottle is rotated in one direction, while the chain or brush or other device for cleansing the inside of the bottle is rotated in the other for the purposes set forth.

Second, We also claim the use of a cam (like that of a pocket-knife blade) on the hinged end of the rod, I, whereby the same tends to remain in a line continuous with the main spindle, or at right angles, or any other given angle thereto.

Third, We also claim the use of the spring, N, on the bar, m, so as to adapt the same to different depths of bottles.

FIRE-BOX OF LOCOMOTIVE BOILERS—Ross Winans, of Baltimore, Md.: I claim the construction of the fire box in such manner that its entire rear side can be opened and closed substantially as set forth.

BOILERS FOR LOCOMOTIVE ENGINES—Ross Winans, of Baltimore, Md.: I claim the method of constructing the fire boxes of locomotive engines of diminished weight, but of undiminished strength, by staying the crown sheet directly to the exterior shell by means of through bolts, and contracting the space between the two as described, so as to get rid of the disadvantages that would result from the excessive weight of a fire-box of the ordinary construction, of sufficient capacity to burn coal as fuel with economy.

FURNACES OF LOCOMOTIVE BOILERS—Ross Winans, of Baltimore, Md.: I claim the construction and arrangement of the locomotive engine, substantially as set forth, so as to obtain a fire box of greater width than the space within the main frame.

MAKING METALLIC NUTS—S. W. Wood, of Washington, D. C.: I claim a solid female die with a sliding hook for discharging the finished nuts, substantially as set forth.

RAKING AND DELIVERING ATTACHMENT TO HARVESTERS—W. A. Wood, of Hoosick Falls, N. Y.: I claim, first, giving the rake its reciprocating, and rising and falling motions by means of a single traveling belt or chain without any other appliances, and substantially in the manner described.

I also claim in combination with a uniformly moving automatic rake, a delivering apparatus, which is set in motion by the conductor, and buts off the gavel and returns for the next succeeding similar operation substantially as described.

FIRE-BOX OF LOCOMOTIVE ENGINE BOILERS—Ross Winans, of Baltimore, Md.: I claim the combination of a fire-box having one grate and an upper and lower feeding door so arranged as to adapt it to burning either wood or coal, or a mixture of both, as fuel with a locomotive tubular boiler having a steam blast draught substantially as set forth.

COTTON GINS—J. N. Wilson and G. W. Payne, of Memphis, Tenn.: We claim the adjustable hinged hopper and rib frame in combination with the belt arrangement described, by which the side frame can be adjusted, raised, or lowered without stopping the motion of the machine, substantially in the manner set forth.

We also claim the projections, g, on the ribs, substantially in the manner and for the purpose described.

We also claim the toothed feeding cylinder, G, in combination with the inclined grate, H, partition, p, and hinged cover, n, substantially in the manner and for the purpose set forth.

CORN AND COB MILL—Benjamin Winter, of Buckingham C. H., Va.: I claim the combination of the adjustable bridge tree, C, rollers, a, inclined planes, b, on the base of the revolving cone, A, and horizontal stopped discs, c d, for action together, substantially as and for the purposes set forth.

GANG PLOWS—G. W. N. Yost, of Cincinnati, Ohio: I claim, first, the torsion spring above described in combination with the plowshare for the purpose of allowing a single share to swing backward in passing stones and then automatically to replace itself in working position, thus avoiding the breaking of the plow or stopping of the team, substantially as set forth.

Second, The use of the team guide for managing the team, so as to obviate the necessity of employing many drivers, substantially as described.

Third, I claim the use of the team shade in combination with the team guide for sheltering the team from the heat of the sun or from rain, substantially as set forth.

WASHING MACHINE—Henry Yost, of St. Louis, Mo.: I claim the traversing rubber in connection with the yielding rack, j, over the surface of the water in the manner described.

SUGAR MILLS—Frederick E. Dake, (assignor to himself and Thomas E. Hunt,) of Indianapolis, Ind.: I claim the combination and arrangement of the lever frame, D, sliding weight, G, and rollers, C C, with the bed plate, A, when constructed substantially in the manner and operated for the purpose set forth.

FISHING NETS—Thomas Hall, (assignor to Thos. Hall & Co.,) of Gloucester, Mass.: I claim in the art of taking fish by means of a seine, the employment of a bag, B, in combination with the seine, A, substantially in the manner as specified.

NAIL MACHINE—Henry Greene and Wm. J. Gordon, (assignors to Henry Greene.) of Philadelphia, Pa.: We claim, first, the combination of the carrying chains, H H, and the rack chain, J, with the nail rod holder in the manner substantially as described, to move the rods laterally along the anvil and turn them simultaneously.

Second, The arrangement of the front edge, r r, of the anvil obliquely to the direction of the movement of the carrying chains substantially as described, for the purpose of causing the nails to be drawn from head to point in the foregoing process.

[See notice of this improvement on another page.]

ADJUSTABLE SEATS FOR VEHICLES—Geo. J. Lucas, (assignor to himself and John G. Lucas,) of Poughkeepsie, N. Y.: I do not claim broadly and irrespective of the arrangement shown, so connecting wagon seats that one may be folded or closed over the other, for this has been previously done.

But I claim the connection of the two seats, B C, by means of levers, D D, and links, l l, substantially as and for the purposes set forth.

[See description of this invention on another page.]

BENDING MOLD BOARDS FOR PLOWS—Benj. Pitcher, (assignor to himself, Wm. Tobey, and John Anderson,) of Peoria, Ill.: I claim the combination of the stationary die, B, with the movable die, C, hinged to the stationary, and constructed and arranged as described, so that the heated metallic plate subjected to their action is, during the process of being bent into shape, gradually compressed and drawn from its inner to its outer edge, and retained under compression until the entire bending is completed, for the purpose described.

CONTINUOUS PRIMING FOR FIRE ARMS—D. G. Rollin, of New York, (assignor to Geo. G. Martin, of Brooklyn,) N. Y.: I claim the continuous priming formed as set forth, to be combined with and operating in fire arms by means of an independent cut-off as specified.

GAS METERS—Thomas Shaw, (assignor to himself and C. S. Patterson,) of Philadelphia, Pa.: I claim the construction of the oscillating drum, B, in such a manner as to contain the sealing fluid or seal. W, with lever, L, attached to said drum, the whole for operating the valve, G, by the oscillation of the drum as set forth, in combination with the inlet and outlet passages, y and z, as described.

SHIP'S CAPSTAN—J. R. Taylor, (assignor to William Skiddy,) of New York City: I claim the freely revolving plate, e, for carrying the intermediate gear wheels, in combination with the capstan head, and with the shifting stop, p, substantially as described.

OVENS FOR COOKING STOVES—Jas. Easterly, of Albany, N. Y.: I am aware that stove ovens have been in whole or part lined with brick gypsum and other non-conducting substances, the object being in those cases to prevent the radiation of the heat from the interior of the ovens, either to make a cool summer arrangement or to retain the heat internally; this I disclaim as not being the intention of my arrangement and invention which requires not non-conducting, but slow-conducting solid material, not to keep heat within the oven, but to transmit heat applied externally slowly and steadily to the interior of the oven.

But what I claim is the construction of stove ovens or analogous structures by surrounding them with double outside walls containing in the chamber formed within them some slowly conducting and radiating solid material to absorb heat, communicated on the outside of the chambers and radiate the same internally substantially as described in the specification.

SYPHONIC RADIATOR—Chas. Williams, (assignor to himself and C. J. Shepard,) of Brooklyn, N. Y.: I do not claim a hot air chamber or retort placed in a furnace over the fire and supplied with air by a pipe or pipes placed nearly horizontal, as such have before been used.

Neither do I claim inducing a downward circulation of the products of combustion, as this has heretofore been used, both in the flues of chimneys, furnaces, &c.

But I claim the syphonic circulating and radiating pipes formed of two or more vertical or nearly vertical limbs attached at their upper ends to the shell or casing of the furnace, and connected at their lower ends to each other and operating substantially as and for the purposes specified.

EXTENSIONS.

HAY PRESSES—C. F. Paine (Jos. Eaton, Adm.,) of Winslow, Me. Patented April 25, 1844. Extended April 25, 1858: I claim connecting the feet of the platen rods, E E, with the platen or follower by means of links or other contrivances of a similar character, the object of the said links being to permit the lower ends of the rods to be moved laterally from the ends of the bale as set forth.

METALLIC LATHS FOR FIRE-PROOF CEILINGS OF HOUSES—Palmer Sumner, of New York City. Patented April 25th, 1844. Extended April 25th, 1858: I claim the method of constructing metal laths either of iron or any other similar material.

Also the constructing of ceilings by running the laths diagonally across the room so as to be least effected by the expansion, all of which is fully set forth in the specification and drawings.

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# New Inventions.

### Nail Machine.

H. Green and W. J. Gordon, of Philadelphia, Pa., have invented and patented an improved method of turning the rods in nail machines, which enables all sides of them to be hammered upon by a single, or one of a series of hammers, moving in the same direction, and of moving the rods laterally at the same time as they are turned, namely, between the successive blows of the hammer or hammers upon a properly arranged anvil to cause the operation of forging nails to commence near the head, and gradually proceed towards the point, thus imitating the operation of forging by hand. There is also a certain arrangement of the anvil relatively to the lateral motion of the nail roads for the purpose of drawing the nails from head to point in the forging operation.

### Improved Oscillating Pump.

Our engraving is a side sectional elevation of this improved pump, the advantages of which will be apparent to the reader as we proceed in our description. The pump is one of that kind which have a rocking or oscillating piston, the water being discharged through the central shaft.

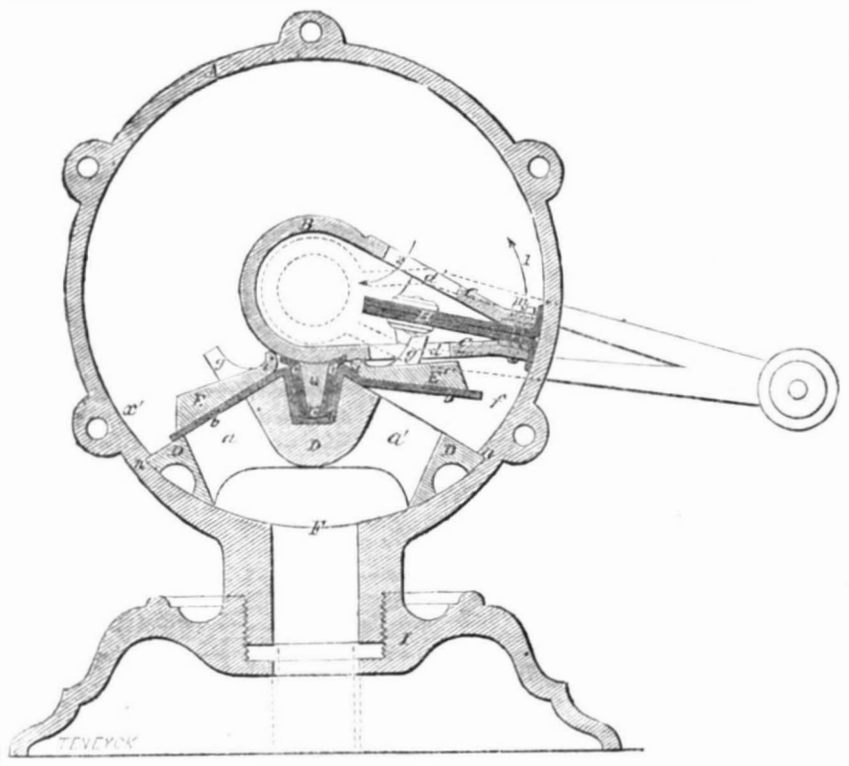
A is a cylindrical shell, through the center of which a hollow shaft, B, passes, this shaft being fitted so as to oscillate. C is a hollow piston attached to, and forming part of the shaft, B. The extremity of the piston, C, nearly touches the inner periphery of the shell, and when the shaft, B, is oscillated, the piston sweeps the shell from $x$ to $x'$. D is a permanent valve seat, upon which the flat valves, E E′, rest ($a$ $a'$ being the openings of the valves). F is the induction port, communicating with the openings, $a$ $a'$. $b$ is a leather hinge or flap, to which E E′ are attached, the middle of $b$ entering a cavity in the center of D, where it is secured by a wedge-shaped block of wood, G, an additional packing or strap of leather, $c$, being interposed between the wedge and the flap, $b$. The under side of the shaft, B, touches the top of the wedge piece, G, which thus forms a packing for the oscillating shaft, B. The wedge piece, G, is of the same length as the width of the interior of the shell, A. The wedge piece thus performs the double function of packing the oscillating shaft, and keeping the flaps, $b$, with their valves, E E′, in place. Several important advantages arise from this arrangement.

Both the wedge, G, and leathers, $b$ $c$, swell slightly when moistened. This swelling tends to press the wedge piece tightly up against the shaft, B, but the pressure is, to a certain extent, elastic, owing to the nature of the materials. The ends of the strip, $c$, are also projected up against shaft B, and act as a packing. H is a pendulous valve, suspended from the extremity of C, and extending down through the central part of it. The valve, H, swings alternately against the inner surfaces of piston B, and then alternately opens and closes the apertures, $d$ $d'$, the outer ends of the leather, H, serving as a packing for C against A, being kept in position by the screw bolt, $m$. When the piston is moved in the direction of the arrow, 1, the resistance of the water above the piston presses down the valve, H, so that it closes the aperture, $d$, leaving $d'$ open. The water above or in front of the piston also closes the valve, E, and it is, therefore, forced to make its exit through $d'$, into B, as shown by arrow 2, whence it emerges by a nozzle attached to one side of A. The advance of piston C, in the direction of arrow 1, produces a vacuum behind the piston, which opens valve E′, and inducts the water through the passage, $a'$. When the motion of the piston is reversed the valve E′, is closed, and $d'$, while $d$ is opened, and the water is passed into the shaft in the opposite direction to what it was before. The tripping of the valves in order to permit all the water to escape when desired, is done in the following manner :—Upon each of the valves, E E′, is a projection or pin, $g$ $g$, and the back end of the valve is turned up a little, so as to form projections, $i$ $i$. If the piston, C, be made to oscillate sufficiently far, its lower sides at the end of such movement will come in contact with one of the projections, $i$ $i$, and the valve, E′, will be tripped or lifted, and the projection, $g$, will pass through $d$, and strike against H, lifting that also. A similar operation takes place at the opposite side, and no air is allowed to pass in, and thus spoil the vacuum of the pump. The shell, A, is notched at $n$ to admit of the seat, D, and is mounted in a stand, I.

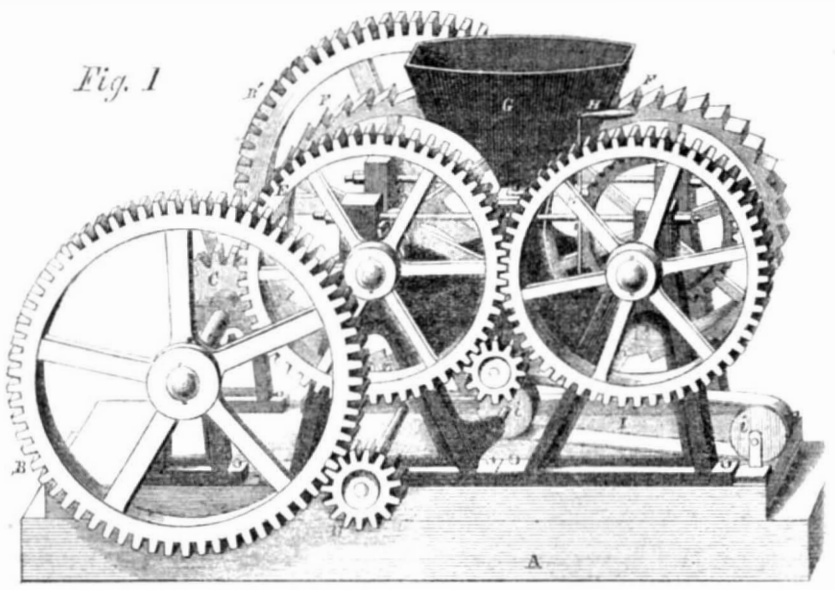
This pump can be worked by hand for wells, &c., or by power, as it is peculiarly adapted to be worked by an oscillating engine, no gearing being necessary, and as a fire engine it would be valuable. They can be placed any distance from the surface in wells, and so are applicable in ships.

The inventor is Washburn Race, of Seneca Falls, N. Y. Any further information can be obtained by addressing Race & Matthews, of the same place. It was patented November 24, 1857.

## RACE & MATTHEWS' IMPROVED OSCILLATING PUMP.



## WAGNER'S BRICK MACHINE.

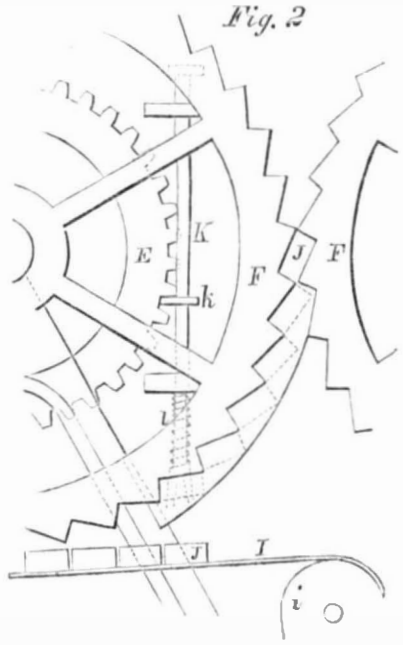



The manufacture of bricks is one of the most important changes of raw material into a useful product, and as an art it is almost the oldest known. In Egypt, bricks have been used in the construction of buildings for more than three thousand years, and the making of bricks was entrusted to captives taken in war. Thus we learn that the Israelites in their captivity made bricks, and one of of their complaints to Pharoah was that they were allowed no chopped straw to prevent them cracking. The clay or mud of the Nile from which these bricks were made was of a very friable character, and they required some substance such as hair or straw to mix with it to bind the bricks. It is not many years ago since bricks were first made by machinery, but in that time very much has been done, and we now illustrate a machine—the invention of I. Z. A. Wagner, of Philadelphia, Pa.—which makes a very perfect brick, and with great rapidity. This is an entirely new invention or rather an entirely new method of making bricks, as there are no plungers, mold-boxes, or stampers employed, but simply two mold-wheels and the requisite gearing.

Fig. 1 is a perspective view, and Fig. 2 a section of the molding wheels of the machine. A is a base, on which the machine is erected, and B, B′, C and D are gearing wheels that give the necessary motion, in the proper directions, from a prime mover, either horse or steam power, to the gear wheels, E. These wheels, E, have on their axles or shafts two mold-wheels, F, having their peripheries indented in the manner shown, and these axles run in journals mounted in suitable frames. G is a hopper into which the tempered clay is put, and as the two mold-wheels, F, revolve within it, they take up a portion of the clay and when they meet, mold a perfect brick, as indicated by J.

As the bricks would be liable to stick to one of the mold-wheels, F, a device is provided for freeing them from it, which is better seen in Fig. 2. On one of the axles a small toothed wheel, E, is placed, and by the side of this there passes down a rod, K, provided with a

Fig. 2




projection, $k$, and working up and down in suitable bearings; there is also a spring, $l$, which has a tendency to force the bar, K, up and keep it from the bricks.

When the machine is in operation, the wheel, E, catching against $k$, depresses it, and forces out a brick upon I, when it is again free, the spring, $l$, brings the rod, K, up, and ready for the next brick. The bricks pass on to an endless delivery belt, I, that passes over two rollers, $i$ $i$.

It is a most simple and perfect machine, and will, we have no doubt, operate satisfactorily. A patent was granted this week, and the claim will be found on another page. The inventor, if addressed as above, will be happy to furnish any desired particulars.

### Improved Wagon Seat.

G. J. Lucas, of Poughkeepsie, N. Y., has invented and patented a new way of arranging the seats of wagons, so that they may readily be converted from a one to a two seated vehicle and *vice versa*.

### Improved Card Press.

With this invention, by the simple revolution of a driving crank shaft, the inking roller is moved forward and made to ink the form and the card at the same time, is carried forward and left upon guides or supports of the platen, said inking roller and card feeder returned to their original positions, and at the same time the printing form is brought up with a heavy pressure, and caused to print the card which was left upon the supports of the platen. The cards are fed to the form singly, and the hopper in which they are placed is made so as to accommodate all sizes. This is an exceedingly simple press, and very perfect in its operation. It is the invention of W. W. Clarkson, of Baltimore, Md.

PATENT CASES.—Besides the reaper case, two other important suits have been decided in the United States Circuit Court sitting at New Haven, viz. :—Burr *vs.* Copperthwaite, for using Taylor's patent for forming hat bodies. Judge Ingersoll decided that Taylor's patent was not an infringement of the Wells' patent owned by Burr & Co. A decision was also rendered in an important sewing machine case, namely, Wheeler & Wilson and Grover & Baker against parties for using rough surface and spring pressure feed. Decision rendered for plaintiffs.

We are compelled for want of space to omit the "points" involved in these cases, but will endeavor to give them next week, as they are very important.

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# Scientific American.

NEW YORK, MAY 8, 1858.


### American Cotton is King.

Almost every regular mail arrival from Europe furnishes information of meetings held, or measures taken, for an increased supply of cotton, and an extension of its cultivation in other regions than those whence the largest supplies are now obtained. Just previous to the late monetary panic, cotton had attained to such a high price that British manufacturers of coarse goods found themselves compelled to curtail their operations, and as a consequence, they were greatly incited to devise some other means for securing a larger supply at lower prices. Being dependent on the United States for four-fifths of that which they use, they felt that American cotton was their king, hence they looked to other regions for relief. The city of Manchester being the metropolis of the cotton trade, it has always been the most active in endeavors to widen the sources of its supply, so that its manufacturers should not be entirely under the sceptre, as they now are, of the American monarch. They had for quite a number of years contributed large sums for developing the cotton culture in Hindostan; and Americans experienced in all the processes of its development—from planting the seed until it was baled for market—were employed to teach the natives, and establish its cultivation upon an extensive, economical and permanent basis. These efforts, in their most flattering aspect, never encroached on the power of the American Cotton King; in fact, they proved almost abortive; and the late rebellion in the East Indies has shut out all prospects of relief from the effeminate cotton raisers of Bombay and Bengal.

The cotton fields of India, instead of looking white, as was at one time anticipated, are now dark and desolate; but it would seem that the hopes of English manufacturers, though cast down, are not destroyed. With that remarkable tenacity of pursuing a desired object under all difficulties, for which Uncle John is so much distinguished, he has turned his thoughts and eyes from India, and now fixes them upon Africa. The region of Abeokutah seems to attract the attention of the English cotton interest at present. Considerable quantities of tolerable cotton have been raised there and imported to Liverpool; and the natives have been stimulated in various ways to devote themselves to its cultivation. It might have been supposed that as the price of cotton at present is quite low, in comparison with what it was a year ago, the ardor of the "Cotton Supply Association" in Manchester would have been somewhat cooled in reference to efforts to render themselves independent of the American planters; such, however, is not the case. On the 9th of last month (April), a very large meeting of the society was held, and resolutions adopted, amid much applause, to extend the organization, with a view to more wide-spread and vigorous efforts. The late expedition fitted out with the famous Dr. Livingstone as its chief, has for one of its main objects the encouragement of cotton cultivation in Africa. It is intended to establish various trading stations, and induce the natives to practice agriculture, and the raising of useful native products for foreign export. There are on that continent, it is asserted, tracts of country thousands of miles in extent, on which the best qualities of short staple could be raised and sold at a cost far below American cotton. The attempt, therefore, is to be made to carry the war against American King Cotton into Africa; with what success the future alone can truly determine.

When flax cotton was first made by Chevalier Claussen's process, great things were expected from it, and among others it was to supersede cotton; but that speculation has not yet dethroned the Cotton King. India, it was also stated, was to break his sceptre, but that speculation has ended in failure also; and so we think will be the case with Africa. The culture of cotton in America is conducted with so much scientific and practical skill, and our inventors are so diligent in endeavors to improve the machines employed in every branch of its manipulation, that we have no doubt but for a great number of years to come, at least, America will be "Cotton King."

### Employment for our Poor in the West.

We have often had occasion to deplore the feeble support given by the wealthy classes to the philanthropic efforts of those who have made it their special mission to provide homes and employment in the western States for the worthy and industrious artizans, boys and girls of our commercial and manufacturing towns, who have been thrown out of work by the late financial crisis. There are many in this city now languishing upon the bounty of the public, or barely supporting a miserable existence on wages totally inadequate to the supply of the most pressing demands of nature, whose labor is wanted in healthy and flourishing villages, towns and farms in the West, where their presence would be welcomed, and a liberal return made for their labor, but who are prevented from going by the want of means. There is again another class, whose friends would advance the necessary means for their deportation, and who would willingly go, did they have the proper assurances of success after reaching there. Why then cannot the societies already in existence be increased and backed by the necessary means to establish agencies at the points where labor is required, and advance to the deserving, upon proper security, the necessary means to transfer them to the scene of their labors? The security of this advance would be mainly upon the individual responsibility of the recipient, it is true, and in many cases would be worthless; but we believe that such an understanding could be generally had with the employers and employes as would insure its return at a future period. If such a system were properly carried out, a large amount of misery would be relieved, and a proper encouragement given to the commendable efforts of many a worthy and industrious person.

Although the late distresses and sufferings have experienced some diminution, our trade and manufactures are yet suffering under the most grievous losses and embarassments; and anxiety, dejection and want are depicted upon the countenances of many of the unemployed in our midst. We shudder to think of the large number that have been diverted from the true path by grim want and sorrow. Want of employment by the head and other members of a family, too often involves the neglect and total ruin of the younger dependent members of the household; and a heavy responsibility presses upon us all, in view of the sore afflictions and enticing temptations daily experienced by this class of fellow creatures. There are many females among them possessing the sterling virtue, industry, and charms of person and mind, to beautify and make sacred any western home in which their sphere of action may be cast, who simply need a helping hand to assist them in fulfilling this, their legitimate mission, and prevent them from entering the golden gate of misery and ruin ever glittering before them in large cities. It is indeed to be regretted that the delightful visions of youth—the days made sacred by truth and virtue—should be embittered by such means, when the accomplishment of the most ardent virtuous aspirations are almost within the grasp. We sincerely trust that the praiseworthy disinterested zeal of those good men and women who have embarked in this noble enterprise will be increased, until all the worthy poor children of both sexes, and many of the adults, shall be transferred to the picturesque and healthy portions of the great West, where their industry will be rewarded and appreciated, and principles of virtue and wisdom will be propounded, away from scenes whose contaminating influence is but too evident from the fatal consequences which have attended their dereliction.

### Why we Oppose the Extension of Patents.

MESSRS. EDITORS—I have noticed from time to time that you have taken very strong ground against the extension of certain patents by act of Congress, and I am at a loss to know how you can reconcile this opposition with your professions of regard for the rights and interests of inventors. You do not pretend to deny that McCormick, Colt, Goodyear, Chaffee, and Sickles are ingenious men, and that they are the original inventors of what they have respectively patented. Now why in the name of right and justice are they not entitled to all the protection that they have solicited? W.

[In the first place, we are opposed to the extension of patents by Congress on the grounds of national policy and public morals. The chief parliament of a nation should seldom, if ever, be engaged in legislating for private parties and personal bills. Such bills, upon the sound principles of political ethics, should be left to the operation of general laws. Partial legislation ever has been—and ever will be—attended by corruption in every country where it has been practised. Those who seek for favors of this character never scruple to employ the most plausible means to gain their objects. They may not, and dare not, openly hold out the glittering bribe; but the feast and the present, and the power and influence of flattery are always brought to bear upon those whose favor is sought to be secured. When this same Colt's patent was previously before Congress, in 1855, for its extension, it was made evident that the most insidious influences were brought to bear upon Members to get the bill passed. It may be said: "Our Members of Congress are honorable men and above pollution by such temptations." This may be; but until they place themselves beyond the reach of such influences and temptations, they never will be above suspicion. The ancient republic of Athens—once the purest and most noble on the face of the earth—sunk into a mass of bloated corruption by the perversion of legislation to private ends instead of public benefits. Her history speaks to us in a voice of warning.

We also consider it wrong for Congress to legislate upon private bills, such as the extension of patents, when there is a general law in existence to meet all cases that are properly the subjects of its protecting power. Our present patent law provides for the extension of patents for seven years after the expiration of the first term, when the patentees are not sufficiently remunerated. The term of fourteen years, we consider, is sufficiently long to permit patentees generally to obtain a respectable remuneration, under a circumspect management of their business. When patents are allowed to exist for a longer term, they tend, in many cases, to retard improvements and defeat the very objects for which the patent laws were enacted. A patented invention may be admirable in principle, but its manufacture may be confined to certain parties who make very inferior articles. When it becomes public property, and not till then, the public begin to obtain the benefits which should flow from it. By the competition engendered in its general manufacture, a manifest improvement, both in the materials employed and in the mechanical details of its construction, is the inevitable results.

We do not deny that the inventions of the patentees mentioned by our correspondent were original and useful—indeed vastly so—but why should partial legislation be employed for *them* any more than for other equally meritorious inventors, or for all other American inventors, whatever? The same reasons advanced in favor of one can be presented in favor of all. If Congress takes up the private bill of one patentee whose patent has expired, in order to extend it as a question of "right and justice," then, upon the very same principles, a retrospective bill should be passed, extending *every* expired patent. Is Colt, or Goodyear, or Chaffee, or Sickles made up of any better clay than hundreds of other patentees whose patents have expired without being extended?

But we have been opposed to nearly all those patents sought to be extended by Congress during the past few years, because the parties seeking the extensions had nearly all become wealthy, or were so well established in a lucrative business that they did not require the extensions. Some of these patents have also cost the country an enormons amount of money. The Colt case has been before Congress since 1855; and although defeated, and thrust out again and again, it has impertinently returned to the attack, and has employed no stinted means to secure its object. There are 296 Members of Congress, and it is fair to presume that, with the time spent in committees and in Congressional sessions on these private bills, they (the bills) have cost the country at least half a million of dollars. The people have become disgusted with such schemes; they tend to engender a prejudice against inventors as being a selfish class, whereas, nothing can be further from the truth in regard to their character generally.

We have a duty to perform to inventors and the public; and the position we have taken in reference to the extension of patents by Congress is intended to benefit both. If we were to consult personal considerations alone, we should pursue a different course in reference to some of the cases herein spoken of. Our independent course upon certain patent extension cases has cost us some profitable friendships, and may cost us still more; but we cannot be deterred from doing our duty by any such considerations.

### The Infected Ship.

On the 15th of last month the U. S. steam frigate *Susquehanna* arrived at this port from Aspinwall, with 155 cases of yellow fever on board, having landed 85 sick men at Kingston, Jamaica, and having lost 17. Her crew was landed at Quarantine, and by order of the authorities, the ship was sent down to the lower bay, there to wait until some plan was decided upon for ventilating and disinfecting the hold, in which the disease, malaria, or whatever yellow fever is, seemed chiefly to be located. There she lies now, of no use, and may perhaps be the nest egg of an epidemic, while doctors, officials, and the public are saying with the novelist, "What shall we do with it?"

Gentlemen in the daily papers have proposed a voyage to the Arctic regions, but without calculating the expense of towing her there and back; and it has been proposed to fill the ship with ice and salt, and by creating an artificial atmosphere of intense cold, so disinfect the ship; this we are inclined to think is a practicable idea. There is, however, a quantity of machinery in her, and the preservation of that has also to be considered, for if that is to be foolishly sacrificed, she might be sunk for a week and then raised. For our own part, we are inclined to think that air heated by passing through a furnace or boiler and then mixed with chlorine gas, and forced into the hold at a pressure by a pump or fan blast, to act as a ventilating current, would do the work, but we would like to receive suggestions from our correspondents in regard to some cheap and practical method for driving out and conquering the dreadful monster, yellow fever.

### India Rubber Extension Cases.

The Washington correspondent of the *New York Herald*, under date of the 26th ult., says that "the Senate Patent Committee had up this morning for consideration the Heywood india-rubber application for renewal of patent; also the Chaffee application. The committee are unfavorably disposed to recommending any renewals, and will in this respect conform to the action of the House Patent Committee. Thus, the applications for renewals of patents—some twenty in number—may be regarded as dead for this Congress."

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### Self-Indicating Balance Barometer.

We find in the "Annual of Scientific Discovery," for this year, the description of an instrument of the above name, invented by M. Secchi, of Rome, which appears to be a good invention, and worthy of more general attention than it has yet received. Suppose the mercury bowl of a barometer to be placed on a table and the glass tube so arranged as to admit of its being lifted by hand, the force that will be required to lift the tube will be equal to the weight of mercury in the tube, or, in other words, to the amount of atmospheric pressure exercised on the mercury of the instrument. We shall therefore be able to weigh the pressure of the atmosphere by attaching the tube of the barometer to the one end of a balance, and a weight to the other, for it is evident that at every change in atmospheric pressure, a corresponding increase or decrease in weight will have to be made at the other end of the balance to maintain equilibrium. To ascertain the value of absolute pressure on a unity of surface, it will be necessary to take into consideration the weight of the tube, and also the weight of that portion thereof which is immersed in the mercury of the barometer bowl, and especially the internal sectional area; the force which actuates the instrument may also be increased, and permit of more minute and exact readings. If the sectional area be ten square centimeters (a centimeter is ·39370 of an English inch), and as the pressure varies by centimeters in hight, the weight to be placed at the other end of the balance, will be that of nineteen cubical centimeters of mercury, or one hundred and thirty five grammes (a gramme is 15·4440 English grains), while, if the sectional area had been equal to one square centimeter only, the weight would have been but 13·5 grammes.

Starting from these observations, M. Secchi constructed his balance barometer, which has been successfully used for some time in the Roman Observatory. The tube of the barometer is attached to one end of a steel yard or balanced lever, which carries at the other end a counterbalance weight and a small pointer, which is reflected in a mirror. There is also a graduated scale reflected in this mirror, so that a very minute variation of the pointer is indicated by a movement on the reflected image. As the atmospheric pressure is thus weighed, as it were, and not indicated by the hight of the column of mercury, the tube may be made of cast iron instead of glass, as the iron is not liable to become amalgamated with the mercury, if the tube is of equal bore throughout. By increasing the sectional area of the tube, sufficient motive power will be given to the lever, to operate a pencil attached to one end, to record the variations of atmospheric pressure on a piece of paper. Other fluids beside mercury may also be used in iron tubes to obtain the same results. It has been suggested that this barometer may be employed in ships and in mines for signalizing dangers of atmospheric pressure, such as approaching wind storms on the ocean and the flowings of fire-damp in the mines. For this purpose this barometer should have a pointer of iron or some metal, insulated from the rest of the instrument, but in communication with one of the poles of a battery. The dial, over which the pointer has to travel, should be of glass or ivory, having metallic points inserted at those gradations which indicate dangerous variations of atmospheric pressure. These points being placed in communication with the other pole of a battery will, when the pointer comes into contact with one of them, close to the electric circuit, and operate a signal by an electro-magnet, and thus give sensible warning of approaching danger.

It is not a little remarkable that a similar instrument to the above was designed by an American in the early part of last summer. His invention was subsequent to that of M. Secchi, but was made without the least knowledge of the Roman professor's efforts. It will be observed by our readers that the foregoing barometer is similar in the principle of its operation to the one illustrated on page 52, this volume, SCIENTIFIC AMERICAN, but it is very different in its details. From the description given of it, some of our readers will no doubt be enabled to construct such barometers, and test their qualities.

### The Decision in the Reaper Patent Case.

In our last issue we briefly announced the decision of the Supreme Court of the United States, between the rival inventors and manufacturers of reaping machines, Cyrus H. McCormick and John H. Manny, which was delivered by Justice Grier, as our paper was going to press. As then promised, we now lay before our readers the following abstract of the decision, embracing everything it contains of general interest:—

"McCormick charged an infringement of the fourth and fifth claims of his patent of 1845, and of the second claim of his patent of 1847, re-issued in 1853.

I. The first infringement charged is that of the divider—a part of the reaping machine which is of a wedge form, and projects in advance of the sickle, to separate the grain to be cut in the swath from that which is to be left standing until the next swath is cut. McCormick's claim to the divider, as set forth in his patent, is: 'Fourth, I claim the combination of the bow, L, and the dividing iron, M, for separating the wheat in the way described.'

For the purposes of this case, the divider, although a component part of the complex machine called 'the reaper,' may be considered by itself as a machine, or combination of devices, attached to the reaper to perform certain functions necessary to complete the whole operation. In order to ascertain whether the divider used by the defendants infringes that of the complainant, we must first inquire whether McCormick was the first to invent the machine called a divider, to perform the functions required, or has merely improved a known machine by some peculiar combination of mechanical devices which perform the same functions in a better manner. But if the invention claimed is only an improvement on a known machine by a new change of form or combination of parts, (and the evidence in this case shows it is nothing more,) the patentee cannot treat another as as infringer who has improved the original machine by the use of a different form or combination performing the same functions. The inventor of the first improvement cannot invoke the doctrine of equivalents to suppress all other improvements which are not mere colorable evasions of the first.

McCormick's claim is for the combination of the outside bow with an inside dividing iron of a certain form. This dividing iron is but a new form or substitution of that side of the wedge or divider, which in other machines performed the function of separating the inside grain, and raising it to the cutters and reel.

The machine constructed under Manny's patent has a wooden divider, somewhat in the form of a wedge, but it has no dividing iron, nor substitute or equivalent device possessing the peculiar qualities of that instrument. It more resembles the wedge in use before McCormick's patent of 1845, and is certainly no infringement of his claim.

II. The second infringement charged is that of the reel post, a standard on the end of the platform for supporting the axle of the reel immediately over the divider. McCormick's claim to the reel post, as set forth in his patent, is: 'Fifth, I claim setting the lower end of the reel post, R, behind the blade, curving it at $R^3$, and leaning it forward at top, thereby favoring the cutting, and enabling me to brace it at top by the front brace, S, as described, which I claim in combination with the post.'

Manny does not support his reel by a post, or use a brace; he uses a horizontal arm projecting forward from the back part of the frame. This device was used many years before McCormick's first patent of 1834. It is said to be superior to McCormick's braced post, and cannot be an infringement of McCormick's claim.

III. The third infringement charged is that of the raker's seat, which is claimed in McCormick's patent as follows: 'Second, And I also claim the combination of the reel for gathering the grain to the cutting apparatus and depositing it on the platform, with the seat or position for the raker, *arranged and located as described*, or the equivalent thereof, to enable the raker to rake the grain from the platform and deliver and lay it on the ground at the side of the machine, as described.'

By this device McCormick obtained a place for the raker over the finger bar just back of the driving wheel, and at the end of the reel, where he could have free access to the grain, and rake it off the machine at right angles to the swath. It was by limiting his claim to this arrangement, location, and combination that the complainant obtained his patent; and without this construction of it, the claim is neither patentable nor original.

The arrangement, combination and location of the raker's seat used by defendants has been patented to Manny as an independent contrivance and distinct invention. The place for the raker is obtained by a change in the shape of the platform, different from any before employed. It differs from the complainant's device in principle as well as in form and combination, and is, consequently, no infringement of his patent."

[Thus has terminated a suit which, if McCormick had been successful, would have subjected the "Reaping Machine" to his own private monopoly, and made him lord of the harvest. It is a matter of great individual hardship to Manny & Co. that they should have been compelled, in order to shield themselves from a grasping monopoly, to maintain, single-handed, a defence—expensive beyond example—in the most important patent suit, perhaps, ever tried in this country, while the benefits of their success will ensue chiefly to other manufacturers, whom the suit has not cost a single dollar.—EDS.

### More Potash.

Potash, the type of all the alkalies, has of late years been rather scarce, and soda has, in a great measure, supplanted it, because soda is always obtainable from common salt, of which there is plenty both in the land and sea. But there are many processes where alkali is required, for which potash alone will do, as for instance, in the preparation and coloring of many fabrics; therefore it is with pleasure that we announce the discovery of a German chemist, Dr. Meyer, that the vast amount of the necessary alkali for ages locked up in the mineral, feldspar, can be made available. His method is, to calcine 100 parts of feldspar with from 140 to 180 parts of lime, either as hydrate or chalk; these are made into balls, and calcined in a suitable furnace, and afterwards the mass is powdered and heated in water at a pressure from 6 to 8 atmospheres. The potash can then be easily extracted, having been brought into a state in which it can be cheaply worked; and the crude mixture, with the addition of a little clay, furnishes an excellent hydraulic cement.

### New Printing Press.

A new printing press has been invented and patented by T. S. Reynolds, of Athens, Ga., the improvements in which are, first, employing a rotating segment which receives the blank sheets of paper in combination with an intermittingly rocking bed on which the form is placed, and between which and the segment the impression is given. These parts are so arranged and operated that the blank sheets are properly presented to the form, the necessary impression given, the form remaining stationary a sufficient time to be inked, and the printed sheets allowed to be discharged from the segment by the most simple means.

Second, There is a novel inking device so arranged as to work automatically and conjointly with the segment and bed, the ink rollers passing over the form during the "dwells" of the bed, and properly inking it, and, during the movement of the bed, receiving the necessary supply of ink from the fountain through the medium of the distributing rollers.

Third, There is a novel method of counterbalancing the bed, whereby the counterpoise may be graduated as occasion may require, to compensate for the varying weight of different forms, and the bed is therefore equally balanced at all times.

Fourth, There is a guard frame to keep the sheets in proper position on the segment as they are carried around to the form.

### Paddle Wheel.

Nathan Smith, of Berwick City, La., has invented a paddle wheel which is intended for stern-wheel boats, and the invention consists in fitting the two hubs carrying the two sets of arms of a paddle wheel to their shaft, and the attachment of the buckets to the arms of the wheel, in such a manner as to permit, at the pleasure of the pilot or other person, either hub and its attached arms to be turned on the shaft by the pressure of the buckets against the water, to enable the buckets to assume oblique positions, to exert a pressure on the water either in a direction laterally to the boat for the purpose of changing the course of the boat in either direction. There are also certain contrivances for the purpose of enabling the hubs to be released from the shaft, so that they may be capable of turning therein to change the position of the buckets, by the pilot or other person. It was patented this week.

### Improved Breakwater.

Edward H. Tracy, of New York, has invented, and patented this week, an improvement in the above, which is designed to obviate the difficulty attending the washing away of the foundations of breakwaters. The invention consists in constructing the breakwater, dam, or other structure, with two or more longitudinal compartments, which may be subdivided into cells, and having inner compartments provided with a flooring, the outer compartment being open at its lower end, so that in case the filling of the outer compartment escapes in consequence of the washing away of the foundation directly beneath it, the structure will be retained or supported by the inner compartment or compartments while the front compartment is being re-filled, and until sufficient filling has escaped to form a good foundation.

### Apparatus for Impregnating Liquids with Carbonic Acid Gas.

The object of this improved apparatus is to generate carbonic acid gas and charge liquids with the same in such a way that no gas can escape during the process, a difficulty that has hitherto attended apparatus intended for this purpose. The invention consists in attaching a bottle to a chamber, in the lower part of which a throttle valve is placed. The bottle contains the super-carbonate of soda and tartaric acid, from which carbonic acid is generally made by the addition of water; water is placed in the chamber which contains the valve. The whole is so arranged that the valve may be opened by the tilting of the water or acid chamber and the gas generated, and the liquid in the receiver charged without the least chance of gas escaping. It is the invention of Thomas Warker, of New York City, and it is patented this week.

### Improved Hatchet.

N. F. English, of Hartland, Vt., has invented a hatchet having a claw hammer attached or combined. The invention consists in forming the claw on the upper side of the hatchet adjoining the eye, so that the face of the hammer and claw will have nearly the same relative position as in an ordinary hammer, thus rendering the implement much more serviceable than those hitherto produced. The claim will be found on another page.

### New Smut Machine.

This invention consists in a peculiar arrangement of a fan, blast passages, scouring device and screens, so that the cleaning of the grain from smut and other impurities may be done in an expeditious and perfect manner. The inventor and patentee is Jeremiah Tobin, of Newark, N. J.

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## Correspondents

W. E. R., of N, Y.—We cannot answer your inquiry about aquarium pebbles. Write to Mr. Butler, Barnum's Museum, this city.

C. C. H., of Ill.—The best cement known to us for uniting two pieces of leather is a very strong solution of isinglass. Gutta percha dissolved in naphtha, we have been informed, is a very superior leather cement, but we have not tried it personally. Leather bands after being cemented should be allowed to dry before they are used.

D. J. B., of Me.—There is no cement which can unite the two pieces of a broken knife or file, and render the tool as strong as before it was broken. Those who informed you of such a cement are mistaken.

D. B. R., of Ill.—Marine glue is made by dissolving india rubber and shellac in naphtha. We are unacquainted with any process for bleaching it white.

J. B. B., of R. I.—We advise shortsighted persons, in all cases, to wear spectacles, and not try experiments for the purpose of obtaining long vision. It can't be done.

J. P., of Ala.—We do not think your article, "Why dust floats in the air," possesses sufficient general interest to warrant its publication in our columns. We know nothing of the sewing machine about which you inquire.

P. H. B., of Mo.—There is no monthly work issued in this country upon the subject of architecture.

W. Fishbach, of Stanardsville, Va., wishes to correspond with manufacturers of screw bolts and nuts for machinery.

A. N., of N. Y.—The mineral you sent us is gneiss, or ranite broken up, in its fine state, we could not say which; but it is of no use, except, perhaps, to cover your garden walks.

G. H. G., of Mass.—The lifting power of a wooden box one cubic foot in size, and weighing four pounds, placed under water, is 58½ pounds. The lifting power of any object placed under water is equal to the difference between the weight of that body and an equal bulk of water. A cubic foot of water weighs 62·5 lbs.

P. M., of Pa.—You can procure a "barkometer for testing the strength of bark liquor" of Benj. Pike & Son, Broadway, New York.

A. F., of Ill.—We do not know anything about the price, wholesale or retail, of Knapp's rosin oil. It is wholly out of our line of of business.

T. B. McC., of Del.—The article you send us is the oxyd of iron mixed with clay. It will make good paint for roofing purposes, but is not well adapted to the finer kinds of work.

T. C. H., of Pa.—A cubic foot of distilled water weighs 62½ pounds avoirdupois at a temperature of 56½° Fah.

E. S., of Ohio.—The reason why water rises above the surface in artesian wells is owing to the fountain-head being higher than the well surface. The fountain-head may be at a great distance—sometimes hundreds of miles—but it must be higher. You will find a series of illustrated articles on this subject in volume 8, Sci. Am. Tubular steam boilers are more expensive than cylinder boilers.

M. B., of N. Y.—Your fountains are not patentable, although we think that the double Hero's fountain is very ingenious, and as you say, would form a very nice toy if you could get them made cheaply. You are aware that thousands are annually made in Nuremberg, and sold in all parts of Europe, but we have never seen any exactly like yours.

J. J., of Me.—You are about right as to the distribution of the force in your machine; but if you work the compressing air pump by an eccentric on the shaft, you will expend as much power as you gain exclusive of friction, so that you will require a small steam engine to keep your perpetual motion at work. We will pay all fees and prepare your case for nothing, when you have made this chimera work successfully.

E. S. H., of N. Y.—There is no process or substance known to us by which cloth can be rendered perfectly waterproof without being air-tight; but it may be rendered partially so, as follows:—Take four ounces of alum and one of the acetate of lead for every ten gallons of water required to cover the cloth, and boil the cloth in this solution for half an hour, then take it out, and dry it at a heat of 212°. Cloth so prepared is rendered water repellant, and if of close texture, cold water will not readily pass through it. The alum and sugar of lead should be dissolved before the cloth is put into the vessel.

V. L. M., of Pa.—No person has a right to republish a work protected by copyright under any plea, without the privilege of the person in whose name the copyright stands. If a controversial pamphlet is thus secured, and the opposing party is desirous of publishing the whole, or any material portion of it, with other matter by way of correction or reply, he will be obliged to get that privilege from the owner, or pay the usual penalty. The fact of its character being slightly altered by changing its title page, or asserting that the additions improved it, would make no difference. The original work is the base upon which your alleged improvements rest, and, as in patent law, you have no right to use the original without the consent of the owner.

F. G. R., of Va.—Corn planters, with an apparatus for dropping and distributing guano, plaster, and other composts, are already in existence. They are commended by many, but are generally opposed on the ground that the small quantity they are able to carry is soon exhausted, and that they do not deposit the article in the proper relation to the corn, and relative quantity to the quality of the land in which it is planted. The wonderful steam engine, "costing, independent of working machinery, only fifty dollars," to which you refer, was evidently one of the many rotary engines which have for many years been got up with a view of superseding the reciprocating engine.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, May 1, 1858:—

E. J., of Conn., $30; M. G., of Pa., $25; W. H., of Ohio, $30; H. D. W., of Mich., $30; L. L. C., of N. Y., $55; J. A., of Pa., $33; J. B. T., of Pa., $55; J. & D., of N. Y., $30; C. D., of N. Y., $30; O. S., of N. Y., $30; G. W., of Conn., $30; J. L., of Mass., $20; W. C., of Mass., $25; A. S. S., of Mass., $25; F. & Co., of Conn., $25; S. H. Jr., of N. H., $25; J. C., of N. Y., $30; E. T. B., of Ga., $55; E. M., of N. Y., $30; W. S. H., of N. J., $10; T. W. Jr., of Conn., $30; S. T., of Mich., $25; B. & W., of Pa., $30; E S., of La., $30; T. & S., of Pa., $10; S. B., of Ohio, $55; H. & S., of N. Y., $40; J. M., of Iowa, $10; A. C., of N. Y., $25; G. E. C., of Minn., $33; J. W. W., of Ind., $30; C. McI., of N. J., $20; G. M. L. McM., of Ohio, $25; A. J. D., of Cal., $5; W. B. C., of Pa., $30; D. & M., of Ill., $15; I. C., of N. Y., $25; J. R., of Ohio, $30; W. H. R., of Fla., $100; R. & S., of Ohio, $25; G. W. S., of Ill., $25; D. Y. C., of Pa., $30; B. R., of Mass., $30; W. H., of N. Y., $25; J. H. R., of N. Y., $50; W. G. B., of N. Y., $25; H. G. D., of Ky., $25; A. McK., of N. Y., $25; A. P. & Co., of Cal., $50.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, May 1, 1858:—

W. G. B., of N. Y.; J. Y. L., of N. Y.; J. H. R., of N. Y., (3 cases); C. McI., of N. J.; H. G. D., of Ky.; S. H. Jr., of N. H.; A. S. S., of Mass.; F. & Co., of Conn.; J. C., of N. Y.; M. G., of Pa.; W. C., of Mass.; I. C., of N. Y.; G. M. L. McM., of Ohio; B. & W., of Pa.; S. T., of Mich.; E. S., of La.; A. C., of N. Y.; N. H., of Pa.; A. McK., of N. Y.

### Literary Notices.

The New York Pulpit in 1858—A memorial volume, published by Sheldon, Blakeman & Co., No. 115 Nassau street, N. Y. It is known, we presume, to most if not all of the readers of the Scientific American, that for some months past this city has been the scene of a most remarkable religious revival. The church generally has been stirred, and many who have hitherto lived in a state of careless unbelief have been converted to the Christian religion. Unlike many religious revivals, this one has been attended with comparatively little excitement. The volume before us contains a collection of sermons which have been preached in this city and Brooklyn during the progress of the revival, by some of the ablest divines in the various churches, such as Drs. A. D. Smith, Alexander, Burchard, Lathrop, Adams, Cutler, Peck, Prof. Hitchcock, Rev. Mr. Cuyler, and others well known. It is a volume of interest and can be profitably read by all.

Hunt's Merchants' Magazine for May, 142 Fulton street, New York.—The new publishers, Geo. W. and J. A. Wood, have secured the services of Thomas P. Kettell, Esq., as editor, who keeps up the char cter of the articles in a style worthy the late Mr. Hunt himself.

A Manual of Horticulture. Fowler & Wells, New York.—This is a new work, full of practical suggestions and valuable hints for the cultivation of the garden, what, how and where to plant. The chapter on the Flower garden is especially good.

The Atlantic Monthly for May contains a splendid article on "Intellectual Character," and many others of great worth. It has just completed its first volume, and certainly has proved a success.

The Eclectic Magazine.—The May number contains a very excellent selection of articles, one entitled "Photographs for our Bibles," being especially worthy of perusal.


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## IMPORTANT TO INVENTORS.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the Scientific American, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of twelve years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office. 128 Fulton street, New York. We have lately established a Branch Agency on the corner of F. and Seventh streets, Washington (opposite the United States Patent Office). This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.

Communications and remittances should be addressed to MUNN & COMPANY,
No. 128 Fulton street, New York.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

Messrs. Munn & Co.—I take pleasure in stating that while I held the office of Commissioner of Patents, more than one-fourth of all the business of the office came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.
Yours, very truly, CHAS. MASON.

PATENT OFFICE MODELS CAREFULLY made on scientific principles, at low prices, by H. SHLARBAUM & CO., 300 Broadway, New York. References at the office of this paper.

WILEY & HALSTED, 351 BROADWAY, N. Y., publish the following valuable works on Architecture, Engineering, &c.:—Cottage Residences, by Downing, $2. Wightwick's Hints to Young Architects, $1 50. Fairbairn on the Application of Cast and Wrought Iron to Building Purposes, $2. American House Carpenter, by Hatfield, $2 50. Mahan's Civil Engineering, $3. Industrial Drawing, $2. Mosely's Principles of Engineering and Architecture, $3 50. Ventilation in American Dwellings, by Reid, $2. Smith's Manual of Topographical Drawing and Linear Perspective, $1 50 each. Smee's Metallurgy, $1 25. American Engineering, by Weissenborn, $1 per number. For sale, a few copies of Duggan's celebrated work on American Engineering, Bridge Building, &c., as far as complete, 1 vol., bound, $15, or $13 for fifteen numbers.

RIGHTS FOR SALE OF A PATENT SELF-Regulating Windmill, that has been well tested. It operates safely, and makes a steady power in the hardest gales. Great inducements given to agents and dealers. Address A. G. Field, Quincy, Ill.

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"Remarks on the Construction of Lightning Rods, &c.," sent by mail free of charge.

IMPORTANT TO GAS AND STEAM FITTERS.—Hudgin's Patent Coupling for pipes can be seen at Messrs. ARCHER, WARNER & CO'S, 376 Broadway. State, County and Town rights are for sale. This invention (Pat. April 6, 1858,) greatly facilitates the work of attaching branches and making extensions. Persons desiring to purchase this invention can communicate with the patentee by leaving their address at ARCHER, WARNER & CO.'S,
No. 376 Broadway, New York.

MACHINISTS' TOOLS FOR SALE AT HALF PRICE.—I will sell the remainder of the tools belonging to the estate of John Parshley at half price, if called for soon. Said tools are new and in good order. They consist in part as follows:—One 16 foot planer, one 4 foot planer, 10 hand lathes, 2 spliner drills, 13 No. 1 drills, 1 bolt header, 1 shaft straightener, plane centers and jaws, chucks, all sizes, &c., &c.
N. D. SPERRY, Trustee, New Haven, Conn.

A SAFE, GOOD BUSINESS, REQUIRING SMALL CAPITAL.—Any person living within four or five miles of a town, containing 3,000 or more inhabitants, can secure to themselves a good business by purchasing the right, with requisite machinery for cutting Daniel's Granular Fuel. This fuel consists of the swamp growth of brushwood and twigs, and trimmings of trees cut into lengths of about four inches. The machine will cut up with two horse power and two men 1,000 bushels per day. The material wherever introduced is preferred to charcoal or split wood for kindling coal or wood fires, and is found to be a most superior article for a summer fuel. As a patent is secured for cutting this material by machinery, all parties who purchase territory can have exclusive sale in that territory. All communications addressed to B. D. WASHBURN, Taunton, Mass., General Agent for the United States, will meet with prompt attention.

MACHINISTS' TOOLS—A FULL SUPPLY OF every variety, and superior quality, now on hand, and made to order at short notice. Railroads supplied. Also one 8-horse upright engine, in complete order; price $300. CARPENTER & PLASS,
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# Science and Art.

### American and European Railroads.

At a late meeting of the Franklin Institute, as published in the *Journal*, Messrs. Z. Colburn and Holly made some interesting remarks in reference to the management of railroads in this country as compared with France and England. From the statements made, it appears that the average cost of maintenance, renewal of way, and engines and working, is, in New York, 70½ cents per mile run, against but 36½ cents in England, and 42½ cents in France. In the northern United States, the average distance run with the consumption of one tun of coal (or wood in equal proportion) is forty miles; in Great Britain it is seventy-seven miles, and in France eighty miles. The greatest economy, therefore, is practised on French roads. The average cost of fuel per mile run in the different countries is about 6 cents in England, 11 cents in France, and 18 cents in New York and Massachusetts. The average receipts per mile are: In New York, $1 76; Great Britain, $1 44; and France, $2 03.

The speed of the British passenger trains exceeds that of the American, the average being twenty-eight miles an hour. The weight of these trains is much less than that of the American, being about 95 tuns in England, and 130 tuns in New York. The difference in speed is likewise accounted for by the lighter grades of the foreign lines. Besides this, the tracks are more carefully laid than is usual here; the cuttings are wider, the drainage very thorough, the ballasting twenty-six feet wide and two feet deep, the cross-ties nine feet long, and saturated either with coal tar, creosote, or sulphate of copper. The rails weigh seventy-two pounds to the yard, being in height five inches, and much more carefully manufactured than in this country

The cost of a mile of first-class English permanent way, at English prices, is but little more than that of a mile of ordinary American railway, at American prices. The passenger locomotives of Great Britain consume raw bituminous coal with entire success, and without smoke. In Belgium also this fuel is used.

Mr. Colburn was of opinion, after a thorough examination of all the facts, that under the foreign system there was an absolute economy of 30 or 40 per cent over the corresponding results on American railways.

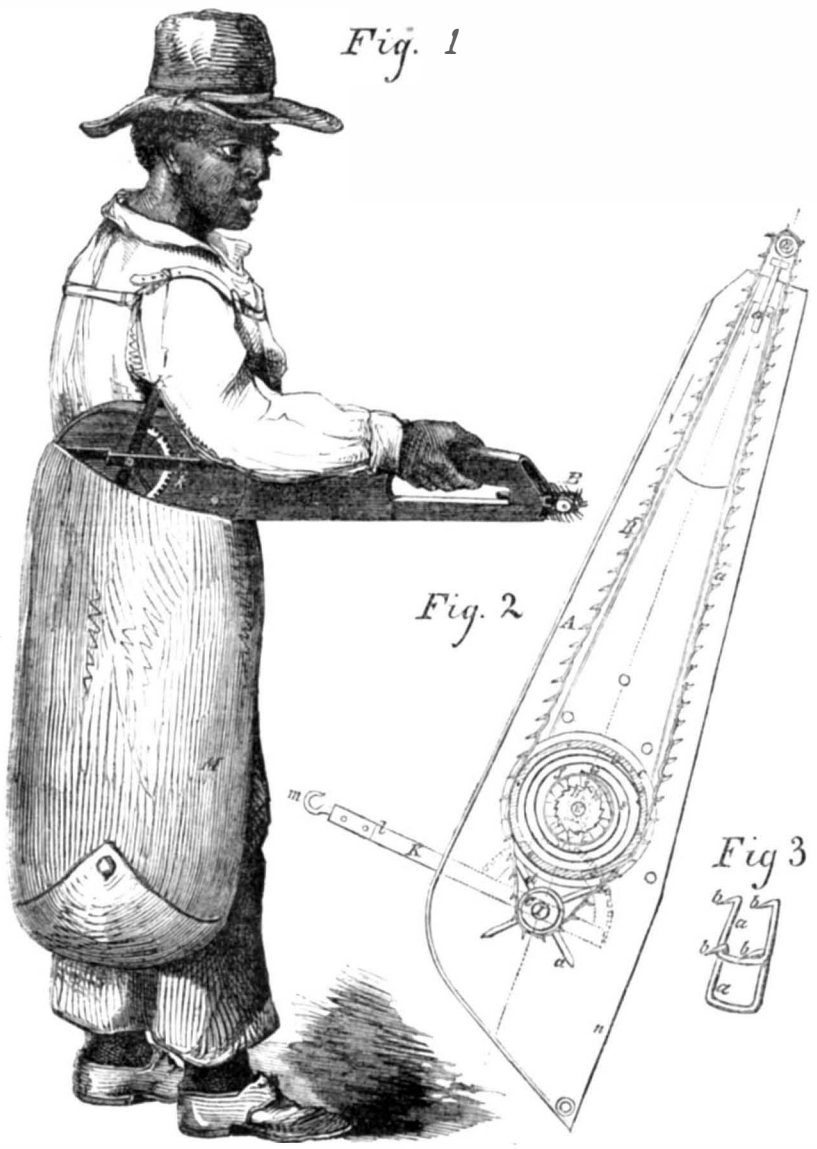
### Improved Cotton Picker.

There have been some cotton pickers devised before the one which is the subject of our illustration, but none of them were self-acting, all requiring to be turned by a crank, or some other equally cumbersome method. The chief requisites in an apparatus for this purpose are, lightness, accuracy of working, and portability, or in other words, it must be compact in the arrangement of its parts, and very simple in its operation. These conditions are fulfilled in the cotton picker we are about to describe, which is shown in operation by Fig. 1, and in section by Fig. 2; Fig. 3 being a view of the pickers.

A is a case of tin plate, or other convenient material, from one end of which a bag, M, is suspended, to contain the cotton as picked, and the case and bag are attached to the operator in the following manner:—At each side of the case, A, there is a strip of metal, *k*, and through these pass axles; from one of these, and also carrying a sectional cog wheel, L, on each side, there is on each side a piece, K, which meet at *l*, and a hook, *m*, passing through it, hooks into a strap passing around the operator's body and over his shoulder. Inside the case there is an endless chain of pickers, B, the construction of which is explained by Fig. 3, *a a* being the bent portion, and *b b* the picking points. This chain passes over a small pulley, E, outside the case, that can, by means of its shaft, *a*, be placed further out, or the reverse, to keep the proper tension on the chain, which passes also over a drum, D, and around a wheel, C. The drum, D, has two rims, *c*, and it is hollow; at a point, *e*, in its inside, is secured one end of a spring, F, the other being attached at *f* to a hollow wheel, G. Inside this wheel there is a ratchet wheel, H, and pawl, *k*, all moving on one arbor, E. The wheel, C, moves on an arbor, I, and it is provided with clearing arms, *d*, which serve to detach the cotton from the pickers, and throw it into the bag, M, suspended from the part, *n*, of A.

The operation of the apparatus is very simple. Suppose that the operator has picked the cotton from one pod, in the act of raising

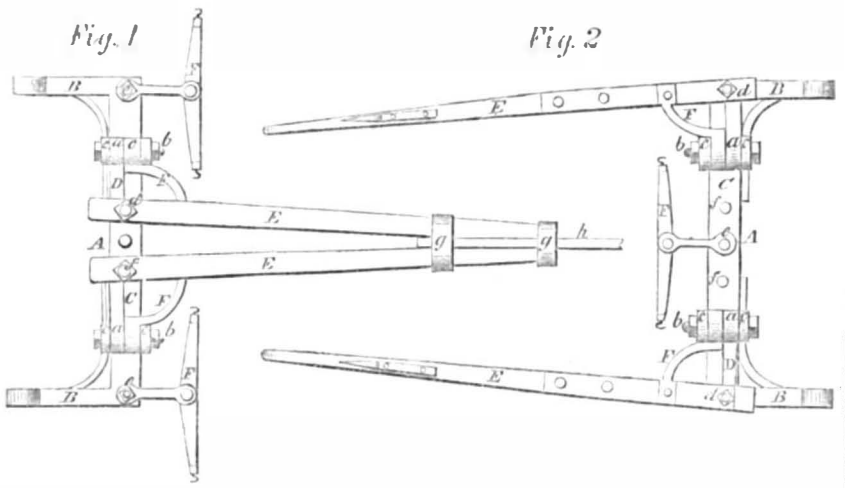
## HOSFORD & AVERY'S COTTON PICKER.




the apparatus to the next, while holding it as shown in Fig. 1; by means of the bar, K, sectional wheel, L, and suitable gearing, the spring, F, is wound up, and the moment the pickers are in contact with the cotton, the spring operating the drum, D, rotates it, and causes the endless chain of pickers to clear the pod. The ratchet wheel prevents the pickers moving the wrong way. Then when the apparatus is depressed to another pod, the same operation takes place. The spring being wound up by each movement of the apparatus, and the endless chain of pickers working the moment it is at rest, so that it is perfectly self-acting, and it can be worked by anybody.

It is a remarkably ingenious invention, and will, no doubt, be fully appreciated in the South. M. Hosford and J. C. Avery, of Macon, Miss., are the inventors; and a patent has been obtained this week, the claim of which will be found by referring to another page. Any further particulars can be obtained by addressing the inventors as above.

## MITCHELL'S CARRIAGE SHAFTS AND POLE.




This invention is designed to render a carriage applicable for one or two horses with little trouble, so that a pair of shafts or a pole can be used on the one vehicle, at the discretion or convenience of the owner. How this is done will be seen by referring to our engravings.

Fig. 1 represents a bar on a carriage arranged with a pole for two horses, and Fig. 2 shows the same with shafts for one.

A is a bar, which is connected to the front axle of the vehicle either by curved metallic bars, B B, termed "goose necks," or "wooden hounds." The bar, A, may be constructed of wood, and have an iron plate, C, attached to its under side. To the plate, C, two metallic bars, D D, are attached by joints, *a a*, which are about midway between the center of C and its ends. These bars, D D, are in line, or in the same plane with the bar, A, and when turned over, or outwards from the center, have their ends flush with the ends of A. To the outer end of each bar, D, a shaft, E, is attached, the shafts being also braced by bars, F, which are also jointed to C at *a a*. The joints, *a a*, are formed by screw bolts, *b*, passing through eyes in D and F, and through projections, *c*, on C, forming, in fact, a hinge joint. Through the outer ends of the bars, D, and through the inner ends of the shafts, E, holes are made to receive bolts, *d*. These bolts, when the vehicle is used for one horse, pass through holes near the ends of bar, A, and secure the shafts firmly to the ends of said bar, and to the center of bar, A, a whiffletree, F, is attached by a bolt, *e*, (see Fig. 2).

When the vehicle is to be used with two horses, the bolts, *d*, are withdrawn, and the shafts, E, folded or turned over inwards, and the bolts, *d*, passed through holes, *f*, near the center of bar, A, the whiffletree, F, being removed from the center of the bar, and secured to one end of it, the bolt, *e*, of the whiffletree passing through one of the holes that *d* formerly passed through. Another whiffletree, F, is placed in a similar manner at the other end of A. The ends of the shafts, E E, are then connected together by metal bands, *g g*, and they may have a bar, *h*, between them, which will serve to lengthen the pole as desired, as seen in Fig. 1, where the shafts, E E, form a draft pole or tongue. It is not absolutely necessary that the shafts should be hinged to A; they may be made to slide, or joined in any other convenient way. This combination is the invention of V. N. Mitchell, of Concord, N. C., and it was patented January 12, 1858.

Any further information can be obtained by addressing the assignees, Messrs. Area, Mitchell & White, of the above place.

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